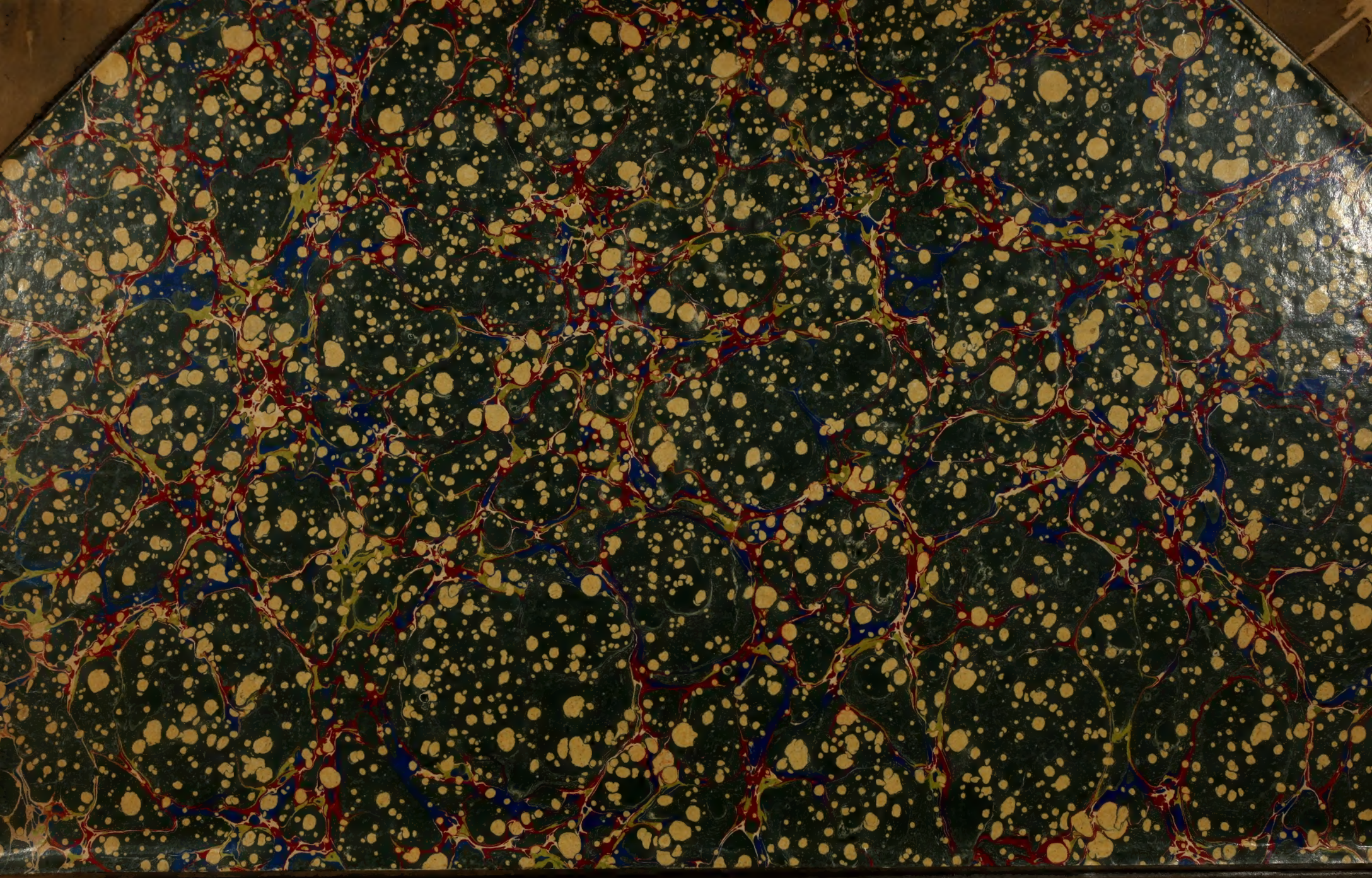


California Academy of Sciences

RECEIVED BY PURCHASE
JULY 29, 1909
FROM
DR. GUSTAV HAMBACH

Accession No. 11684

Digitized by the Internet Archive
in 2011 with funding from
California Academy of Sciences Library

http://www.archive.org/details/kentuckyfossilco00davi

KENTUCKY GEOLOGICAL SURVEY, J. R. PROCTER, DIRECTOR.

Memoirs V. 2, pt. 2

Kentucky Fossil Corals

A MONOGRAPH OF THE FOSSIL CORALS

OF THE

Silurian and Devonian Rocks of Kentucky

BY WILLIAM J. DAVIS

557.3
K 413M

[In Two Parts Part II]

FRANKFORT, KENTUCKY
ELECTROTYPED AND PRINTED BY JOHN D. WOODS, PUBLIC PRINTER
1885

COPYRIGHT, 1887,
BY KENTUCKY GEOLOGICAL SURVEY
[RIGHT OF TRANSLATION RESERVED BY THE AUTHOR]

QE 770
.D38
1885

LETTER FROM THE AUTHOR.

Mr. John R. Procter,

Director Kentucky Geological Survey:

DEAR SIR: As you know, several years have passed since I began the work of describing and illustrating the fossil corals of Kentucky. The delays incident to preparing such a work for the press, occupied as I am most of the time with engrossing public duties, have suggested that now, since the plates and the explanations of the plates have been completed, it is best to publish these as PART II., simply prefacing them with an alphabetical index.

The text of Part I. will be finished in a few months. PART I. consists of 1. An **Introduction,** which treats of the growth and habits of coral-making animals, their place in nature, etc.; 2. A **Descriptive Text,** which classifies the fossil corals found in the Silurian and Devonian Rocks of Kentucky, showing the relations of families, genera, and species, and describing them; 3. A chapter of **Popular Notes,** which, following the technical descriptions, presents the salient traits of structure or function characterizing the skeletons of species of the same genus, on the modifications of which the differentiation is based, and collates comprehensively the resemblances and differences of related genera and the more widely divergent family peculiarities; 4. A **Glossary,** in which are given the meanings and, in most cases, the etymologies of the technical terms used in the text; 5. An **Index,** systematically arranged.

The literature of this subject is diffused through many volumes of State and Government reports and society periodical or casual publications. Many zealous students of palæontology, confused by synonymy or per-

plexed by descriptions and figures of badly-preserved fossils, have abandoned research among these interesting and beautiful forms for the easier study of mollusks, crinoids, worms, or crustaceans. May I express the hope that the present work will prove a useful manual to the student?

As will be seen, the number of plates is one hundred and thirty-nine, the number of specimens figured about one thousand. The number of species described is more than three hundred; of these about one hundred and seventy are new and heretofore undescribed. The beautiful condition in which these fossils occur in Kentucky and the care with which they have been freed from their matrix have permitted a satisfactory photographic delineation by the "artotype" process. Mr. E. Klauber, of Louisville, has done this part of the work under my supervision in the most artistic style. My thanks are due to this gentleman for the assistance he rendered me in "setting up" the fossils before the camera, and for his amiable co-operation during the several years we have been engaged together in plate-making.

Permit me also to thank you, sir, the Director of the Survey, and the other officers of the State of Kentucky, whose generous consideration has given me the opportunity to publish this contribution to the geology of the country in so handsome a volume.

Very respectfully, your obedient servant,

WILLIAM J. DAVIS.

LOUISVILLE, 1885.

POLYPI.

ZOANTHARIA TABULATA.

HELIOLITIDÆ.

	Plates.
Columnopora	
cribriformis	5, 6
rayi	5, 6
Heliolites	
interstinctus	1
megastoma	1
pyriformis	1
subtubulatus	1
Lyellia	
americana	3
discoidea	4
glabra	2
papillata	2, 3, 4
puella	2, 51
Plasmopora	
elegans	1
follis	1

FAVOSITIDÆ.

	Plates.
Alveolites	
constans	43
goldfussi	44
fibrosus	46
louisvillensis	46
minimus	43, 44
mordax	45
niagarensis	46
scandularis	44
squamosus	43
Antholites	
speciosus	78
Cladopora	
aculeata	48, 49
acupicta	52, 58
alcicornis	97
alpenensis	52, 59
aspera	50
bifurca	52, 56
billingsi	52
complanata	49
crassa	62
cryptodens	52
dentata	51, 63
desquamata	52, 76
dispansa	61, 62
equisetalis	48
expatiata	50
fibrata	57
francisci	51, 74

CLADOPORA—*Continued.* PLATES.

gracilis 64
gulielmi 97
imbricata 53
iowensis 64
labiosa 4, 59
laqueata 48
menis 48
ordinata 48
pinguis 54, 55
proboscidalis 48, 97
pulchra 59
radula 58
reticulata 47
ricta 63
rimosa 59
robusta 58
rœmeri 54, 55, 56
striata 48
tela 57

CŒNITES

crassa 4
laminata 4
verticillata 46

DENDROPORA

alternans 65
elegantula 65
neglecta 65
ornata 63, 65
osculata 65, 66
proboscidalis 63

	Plates.
PROCTERIA	
michelinoidea	41
papillosa	41
THECIA	
major	34
minor	34
ramosa	35
swindernana	34
vetusta	34
COLUMNARIDÆ.	
COLUMNARIA	
alveolata	6, 7
stellata	7
HALYSITIDÆ.	
AULOPORA	
cornuta	73
culmula	73
edithana	73, 76
precius	97
procumbens	73
pygmœa	73
serpens	74
DIORRYCHOPORA	
tenuis	74
DRYMOPORA	
auloporoidea	72
commensalis	70
fascicularis	70, 74
frutectosa	72
intermedia	72, 74
nobilis	71

HALYSITES — PLATES.
catenulatus 67
nexus 67

NICHOLSONIA
adnata 78
angulata 80
canadensis 51, 73, 80

ROMINGERIA
fasciculata 75
incrustans 73, 74, 75, 76
umbellifera 75, 76
uva 75
vannula 75

STRIATOPORA
alba 64
huronensis 51, 64
linnæana 64

SYRINGOPORA
bouchardi 68
hisingeri 68, 76
perelegans 69
straminea 68, 76
tabulata 68
tubiporoides 49, 69

ZOANTHARIA RUGOSA.

CYATHOPHYLLIDÆ.

ACROPHYLLUM — PLATES.

clarki 97, 102
ellipticum 94
oneidaense 94

AMPLEXUS

shumardi 132, 138

AULACOPHYLLUM

conigerum 97, 102
insigne 95
mutabile 96
parvum 95, 101
sulcatum 95
unguloideum 95

BLOTHROPHYLLUM

approximatum 99
cinctutum 99, 100, 101
corium 81, 101
decorticatum 98, 99
liratum 97, 102
louisvillense 99, 100, 101
niagarense 99
parvulum 100
sessile 99, 100
zaphrentiforme 102

CALCEOLA

proteus 101, 131

CHONOPHYLLUM — PLATES.
magnificum ... 101, 103
multiplicatum ... 78
nanum ... 80

CYATHAXONIA
gainesi ... 104

CYATHOPHYLLUM
brevicorne ... 79
colligatum ... 91, 92
coralliferum ... 83
corniculum ... 79
davidsoni ... 93, 113
detextum ... 88
ethelanum ... 80
exiguum ... 78, 133
exiguum, varietas elongatum ... 133
fimbriatum ... 82
flos ... 78, 83
greeni ... 78, 80, 130
halli ... 77, 92
infoveatum ... 97
insigne ... 78, 82
juvene ... 79, 80
ligatum ... 88
multicrena ... 83
multigemmatum ... 80, 87, 88, 89, 92
œdipus ... 83, 84
ovoideum ... 93
pocillum ... 81, 101
pumilus ... 83, 101
pustulosum ... 78
radicula ... 86

CYATHOPHYLLUM—*Continued.* PLATES.

robustum 85
rugosum 90, 93
scyphus 86
tornatum 80, 86
trauthanum 80
winchelli 83

CYSTIPHYLLUM

americanum 124
cicatriciferum 125
cuyagaense 80
edwinanum 128
grande 126
hispidum 127, 129
incurvum 124
limbatum 126
lineatum 128
nettelrothi 125
niagarense 124
ohioense 125
os 130
plicatum 100, 128, 129, 130
squamosum 125
sulcatum 125
theissi 128
tumidosum 128
vesiculosum 129

DIPHYPHYLLUM

archiaci 108, 112, 113
bellis 108, 116
coagulatum 117
coalescens 117

DIPHYPHYLLUM—*Continued.* PLATES.
conjunctum 116
gigas 115
panicum 115
strictum 114
verneuilanum 89, 113

ERIDOPHYLLUM
arundinaceum 112
dividuum 109
huronicum 109, 111
eruciforme 107
rugosum 109, 110
sentum 51, 108
simcoense 112

HADROPHYLLUM
d'Orbignyi 103

OMPHYMA
verrucosa 104, 105

PHILLIPSASTREA
gigas 118
ingens 118, 119

PTYCHOPHYLLUM
coniferum 106
diaphragma 106
invaginatum 105
ipomœa 104, 105
stokesi 105
tropœum 106
typicum 106

STROMBODES PLATES.

incertus 123
knotti 120
mammillaris 123
pentagonus 121
pygmœus 123
quadrangularis 122
sinemurus 121, 122, 123
striatus 121, 122
unicus 122

ZAPHRENTIS

compressa 134, 138
conigera 134, 138
conulus 133
cornalba 97
corniculum 132, 138
exilis 134, 138
explanata 134
gallicalcar 97
gigantea 137, 138
greenana 78
immanis 80, 138, 139
linneyi 133, 138
maconathi 136
nettelrothi 97
nodulosa 130, 134, 138
obliqua 133
patens 133
patula 133
prolifica 135, 138
radicans 132
rafinesqui 135, 138

ZAPHRENTIS—*Continued.* PLATES.

reynoldsi 133
romingeri 78, 135
scutella 133
socialis 133
spongiaxis 132
trigemma 130
torquata 134
ungula 133, 138
unica 132
yandelli 135, 138

PLATE 1.

HELIOLITES MEGASTOMA. *Niagara.*

1. Upper surface of a corallum from the ferruginous clay of the Upper Niagara, near Louisville. Collection of the author.
2. Upper surface of a fragment from the stratum of white clay ten feet below the passage-beds separating the Niagara and Devonian, near Louisville. Collection of Mr. McConathy.

HELIOLITES INTERSTINCTUS. *Niagara.*

3. Upper surface of a corallum from the stratum of white clay seven feet below the Niagara and Devonian passage-beds, near Louisville. Collection of the author.
4. Under surface of a corallum from the ferruginous clay, near Louisville. Collection of the author.

HELIOLITES PYRIFORMIS. *Niagara.*

5. Upper surface of a corallum from the ferruginous clay, near Louisville. Collection of the author.
6. Lateral view of a small corallum from the white clay seven feet below the Niagara and Devonian passage-beds, near Louisville. Collection of the author.

HELIOLITES SUBTUBULATUS. *Niagara.*

7. Upper surface of a corallum invested by Stromatopora concentrica, from the white clay, near Louisville. Collection of the author.
8. Upper surface of a corallum from the white clay, near Louisville. Collection of the author.

PLASMOPORA FOLLIS. *Niagara.*

9. Upper surface of a corallum from the white clay, near Louisville. Corallets of smaller size than those of typical examples. Collection of Mr. Nettelroth.
10. Lateral view of a corallum from the white clay, near Louisville. Collection of Mr. Nettelroth.

PLASMOPORA ELEGANS. *Niagara.*

11. 13. Lateral views of coralla from the white clay, near Louisville. Collection of the author.
12. Upper surface of a corallum from the white clay, near Louisville. Collection of the author.

PLATE 1.

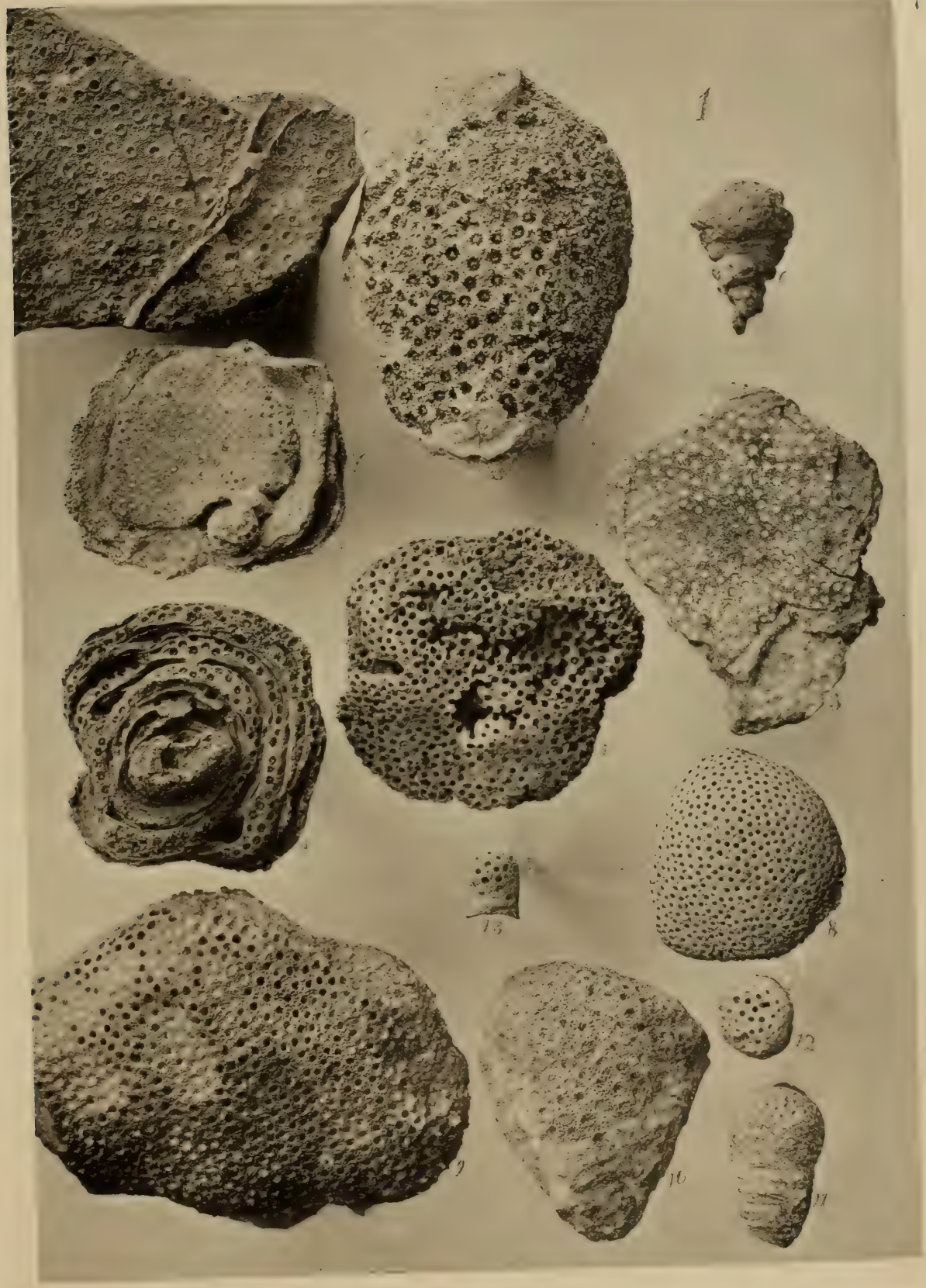


PLATE 2.

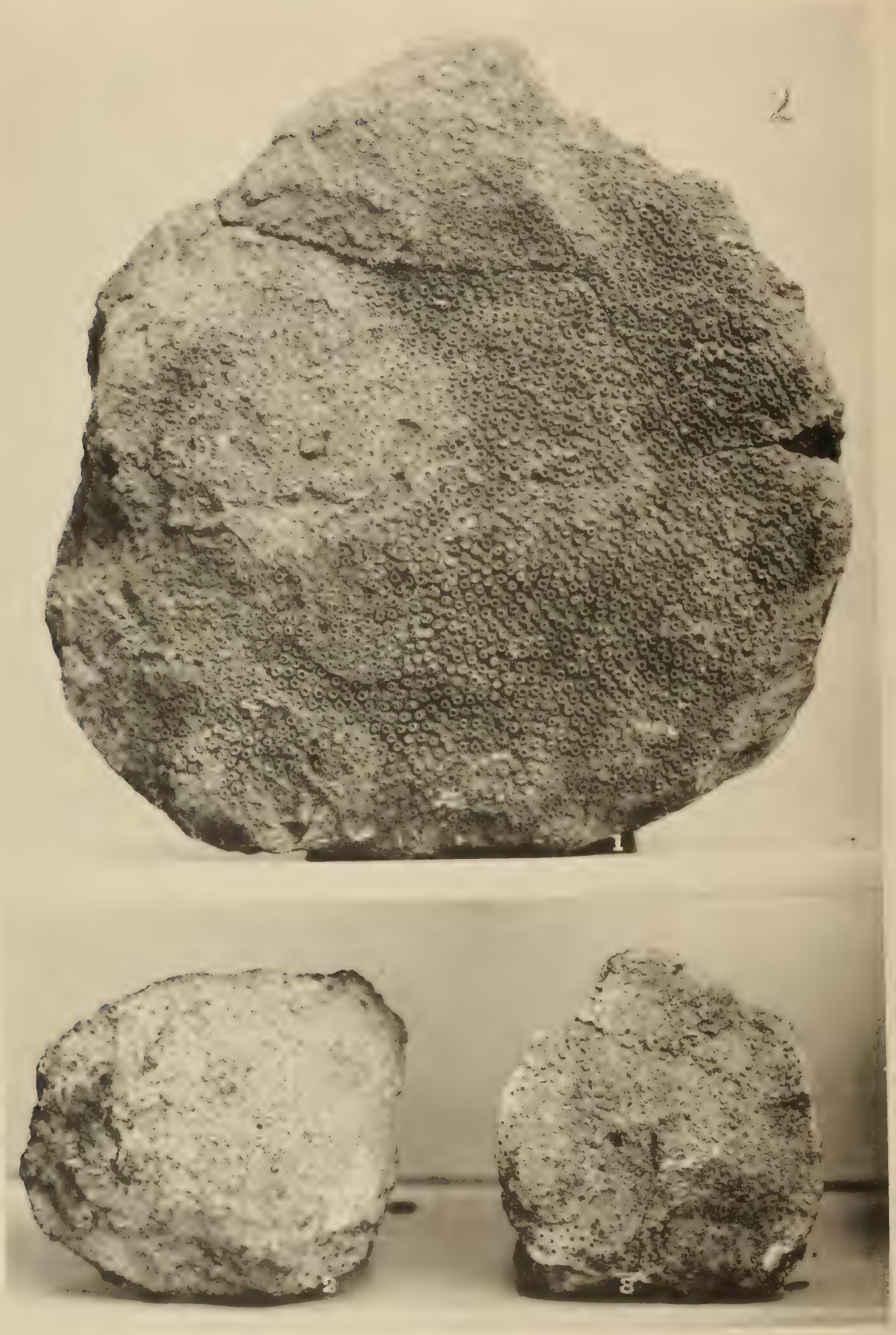


PLATE 2.

LYELLIA GLABRA. *Niagara.*

1. Upper surface of a corallum from the white clay nine feet below the Niagara and Devonian passage-beds, near Louisville. Collection of the author.

LYELLIA PAPILLATA. *Niagara.*

2. Upper surface of a corallum from the white clay seven feet below the Niagara and Devonian passage-beds, near Louisville. Collection of the author.

LYELLIA PUELLA, Nova Species. *Niagara.*

3. Upper surface of a weathered corallum from the limestone twelve feet below the Niagara and Devonian passage-beds, near Louisville. Collection of the author.

PLATE 3.

LYELLIA PAPILLATA. *Niagara.*

1. Portion of the upper surface of a corallum from the ferruginous clay just below the Niagara and Devonian passage-beds, near Louisville. Collection of the author.

LYELLIA AMERICANA. *Niagara.*

2. Upper surface of a corallum from the white clay ten feet below the Niagara and Devonian passage-beds, near Louisville. Collection of the author.

PLATE 3.

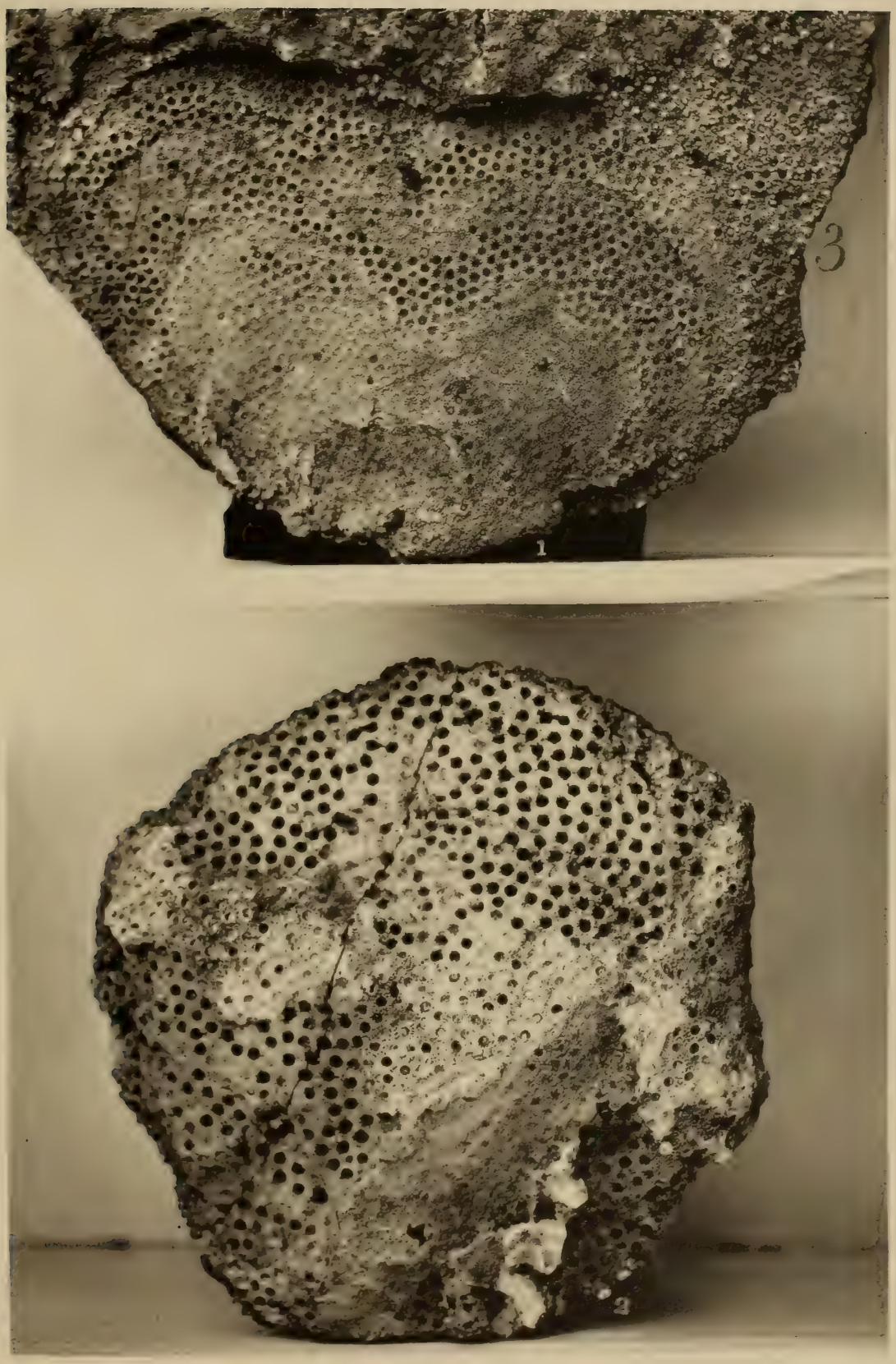


PLATE 4.

PLATE 4.

CLADOPORA LABIOSA. *Middle Devonian.*

1. Front lateral view of the upper fronds of a corallum imbedded in rock matrix, from the Falls of the Ohio. Collection of the author.

LYELLIA DISCOIDEA, Nova Species. *Niagara.*

2. Convex upper surface of a corallum from the white clay, near Louisville. Collection of the author. [The example figured is exquisitely preserved, but its color seems to have prevented good photographic delineation.]
3. Plane upper surface of a corallum, found near Louisville. Collection of Dr. J. Knapp.

LYELLIA PAPILLATA. *Niagara.*

4. Lateral view of a weathered corallum showing the vesiculose cœnenchyma, found near Louisville. Collection of the author.

CŒNITES LAMINATA. *Niagara.*

5. Upper surface of a weathered corallum from the white clay, near Louisville. Collection of the author.

CŒNITES CRASSA. *Niagara.*

6. Upper surface of a corallum from the ferruginous clay just below the Niagara and Devonian passage-beds, near Louisville. Collection of the author.

PLATE 5.

COLUMNOPORA RAYI, Nov. Spec. *Hudson River Group.*

1. Upper surface of a corallum found in Nelson county. Collection of the author.
3. Lateral view of a corallum from the same locality. Collection of the author.

COLUMNOPORA CRIBRIFORMIS. *Hudson River Group.*

2. Lateral view of a corallum found in Nelson county.
4. Upper surface of a corallum from the same locality. Collection of the author.
5. View of the under surface of a corallum from which the epitheca has been removed, showing diaphragms and mural pores; from Nelson county. Collection of the author.

PLATE 5.

PLATE 6.

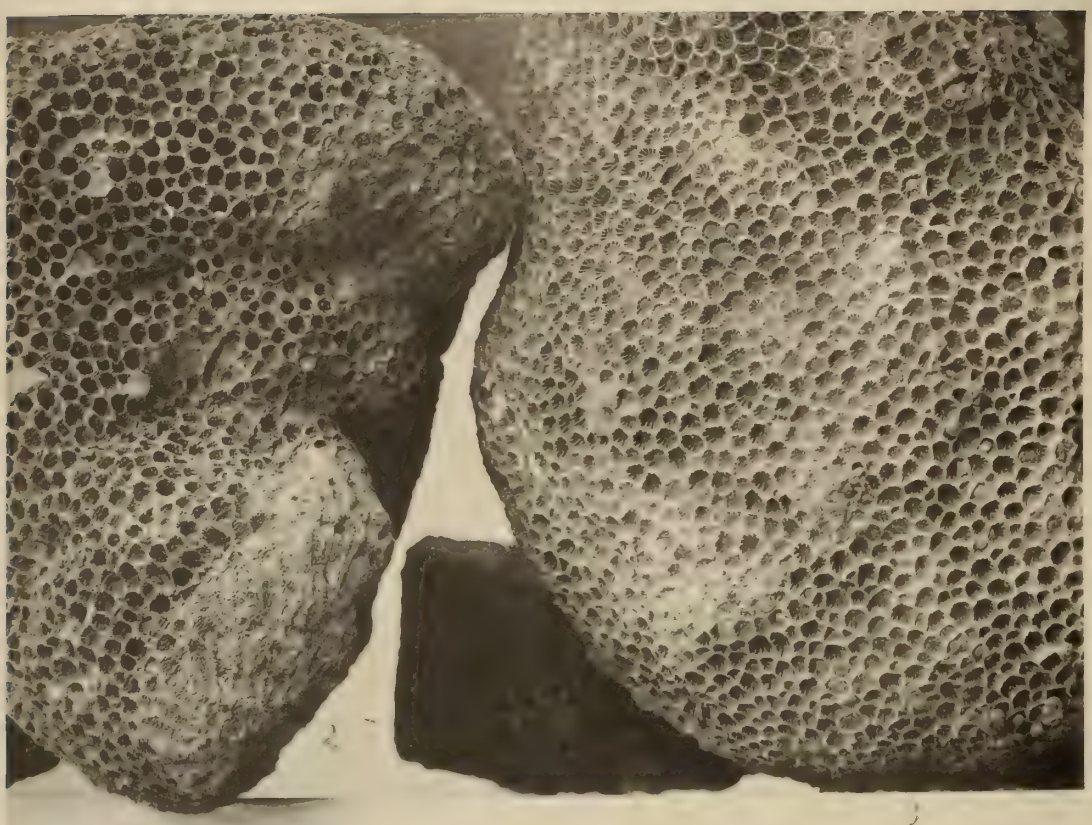


PLATE 6.

COLUMNOPORA RAYI, Nov. Spec. *Hudson River Group.*

1. Lateral view of the corallum figured in Plate 5, Fig. 1.

COLUMNOPORA CRIBRIFORMIS. *Hudson River Group.*

2. Lateral view of a pyriform corallum found in Nelson county. Collection of the author.

COLUMNARIA ALVEOLATA. *Hudson River Group.*

3. Portion of the upper surface of a corallum found in Nelson county. Collection of the author.

PLATE 7.

COLUMNARIA STELLATA. *Hudson River Group.*

1. Vertical section of a corallum found in Trimble county. Collection of the author.

COLUMNARIA ALVEOLATA. *Hudson River Group.*

2. Longitudinal section of a corallum found near Fisherville, Jefferson county. Collection of the author.

PLATE 7.

PLATE 8.

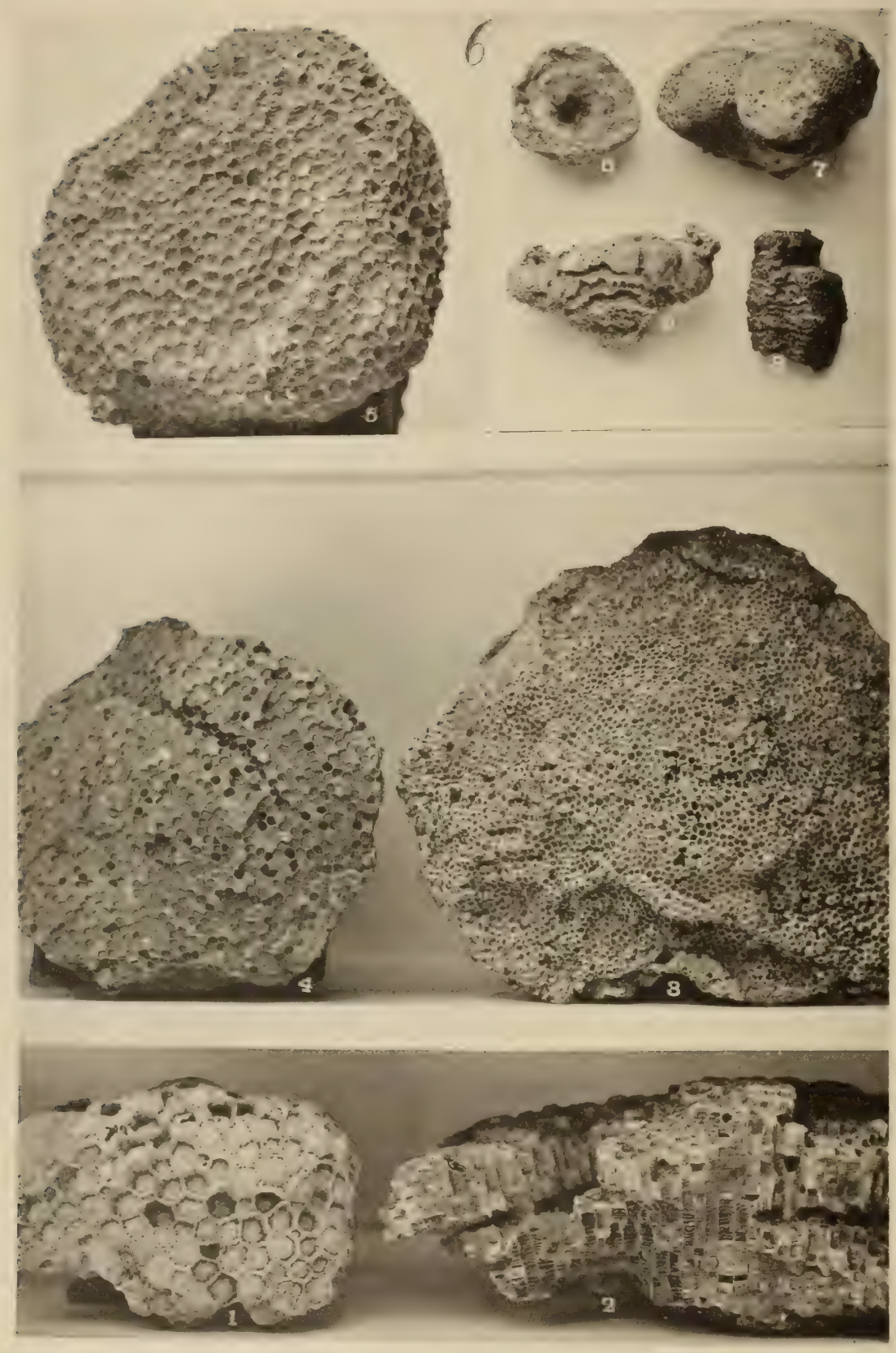


PLATE 8.

FAVOSITES FAVOSUS. *Niagara.*

1. Upper surface of a fragment from the ferruginous clay, near Louisville. Collection of Mr. Nettelroth.
2. Longitudinal section of an example whose corallets are smaller, found in the same horizon and locality. Collection of the author.

FAVOSITES NIAGARENSIS. *Niagara.*

3. Upper surface of a corallum, composed of very small corallets, showing spinulous walls; near Louisville. Collection of the author.
4. Upper surface of an example, composed of the largest sized corallets, with smooth walls; near Louisville. Collection of the author.

FAVOSITES FORBESI. *Niagara.*

5. Upper surface of a large corallum found near Louisville. Collection of Mr. McConathy.
6. View of epithecated under surface of a corallum of average size; near Louisville. Collection of the author.

FAVOSITES SPONGILLA. *Niagara.*

7. 8. 9. Lateral views of coralla found near Louisville. Collection of the author.

PLATE 9.

FAVOSITES CRISTATUS. *Niagara.*

1. Lateral view of a weathered corallum from the ferruginous clay, near Louisville. Collection of the author.
2. 3. 4. 5. Lateral views of several coralla from the white clay, near Louisville. Collection of the author.

FAVOSITES LOUISVILLENSIS, Nov. Spec. *Niagara.*

6. Upper surface of a corallum found near Louisville. Collection of the author.

FAVOSITES VENUSTUS. *Niagara.*

7. Epithecated under surface of a corallum from the white clay, near Louisville. Collection of the author.
10. Upper surface of a fragment, showing spinulous walls; from the same locality. Collection of the author.

FAVOSITES DISCUS, Nov. Spec. *Niagara.*

8. Upper surface of a fragment from the white clay, near Louisville. Collection of the author.
9. Under surface of a corallum, from which the epitheca has been eroded; near Louisville. Collection of the author.

PLATE 9.

PLATE 10.

PLATE 10.

FAVOSITES HEMISPHERICUS. *Lower Devonian.*

Lateral view of a portion of a corallum, showing squamous walls; from the Falls of the Ohio. Collection of the author.

PLATE 11.

FAVOSITES HEMISPHERICUS, ET VARIETATES. *Devonian.*

1. Lateral view of a weathered example, showing corallet walls incrassated by siliceous deposits during fossilization, from the Middle Devonian, near Louisville. Collection of the author.
2. Vertical section of an example from the same locality. Collection of the author.
3. Lateral view of a corallum from the same horizon, near Louisville. Collection of the author.
4. Conical section, parallel with the operculous exterior, from the same horizon and place. Collection of the author.
5. 6. Lateral views of sub-bacillate forms, from the upper clay beds of the Middle Devonian; near Louisville. Collection of the author.
7. Lateral view of a corallum, whose operculous apex has been flattened by attachment to a marine object; from the locality of 5 and 6.
8. Portion of a corallum from the dark red clays derived from the decomposition of the encrinal limestone lying under the shale which caps the Devonian; near Louisville. Collection of the author.
9. Lateral view of a distorted example formed by two sub-bacillate forms intimately united; from the horizon of 5 and 6, near Louisville. Collection of the author.

PLATE 11.

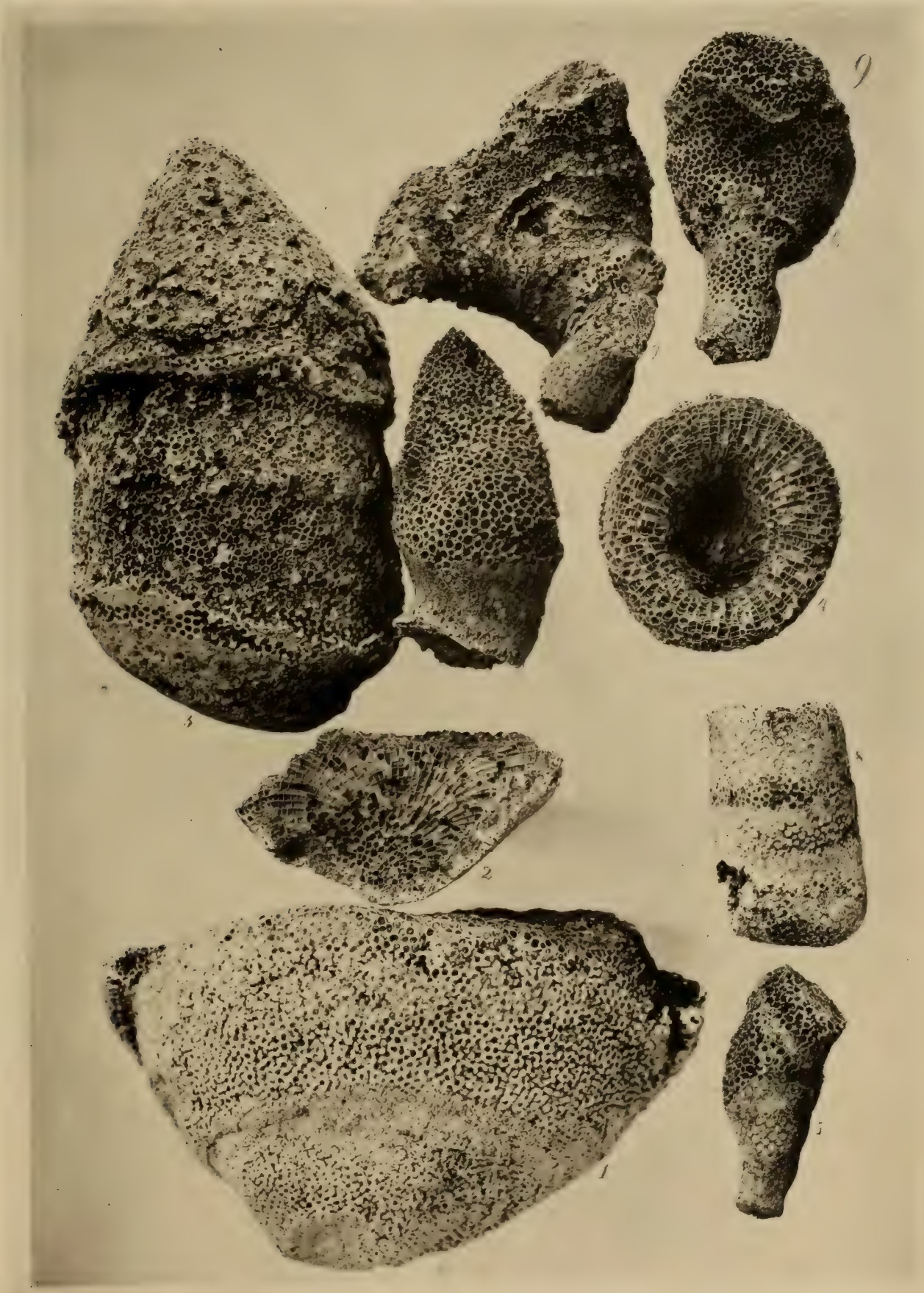


PLATE 12.

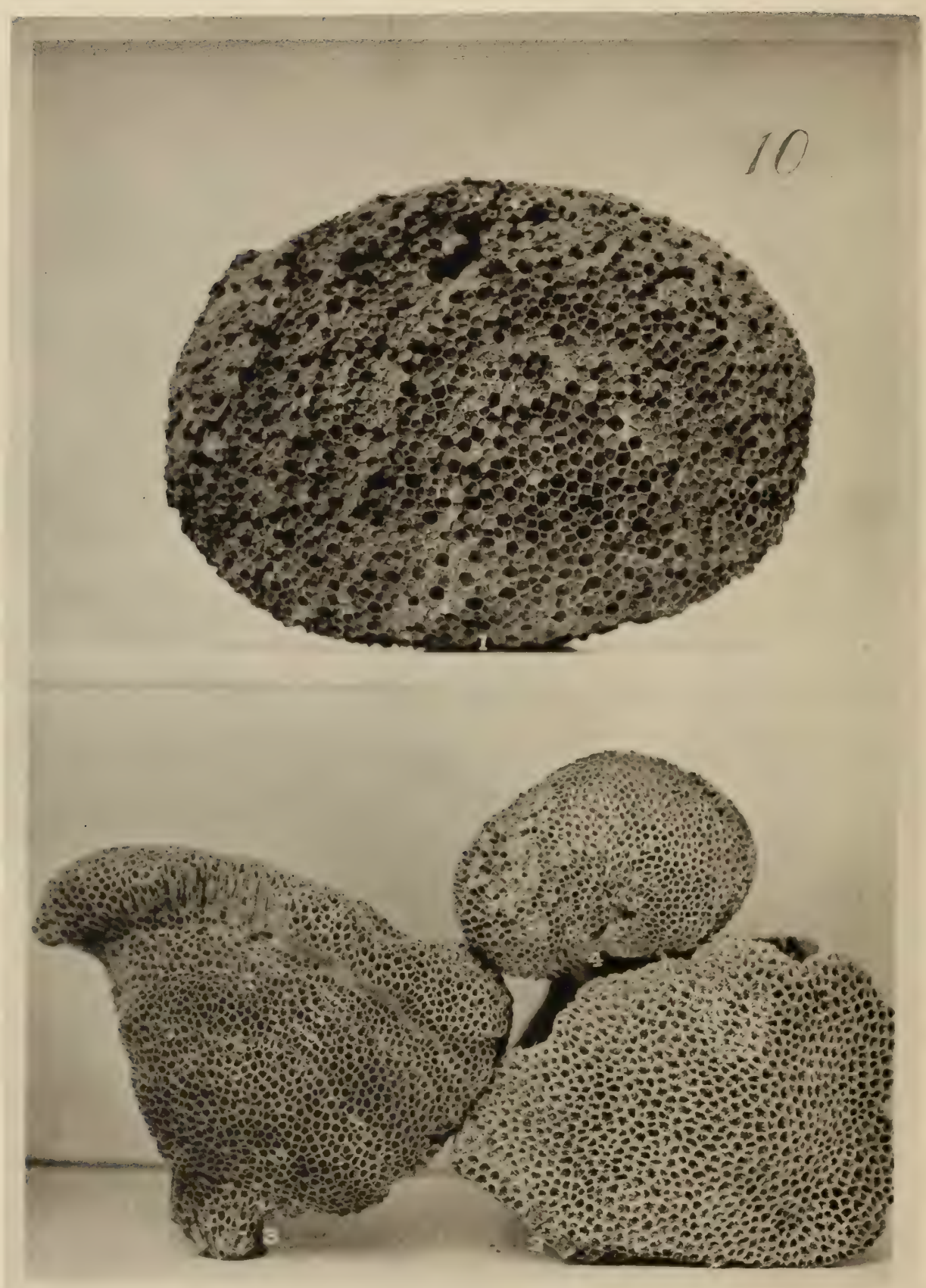


PLATE 12.

FAVOSITES EPIDERMATUS. *Devonian.*

1. Upper surface of a corallum from the ferruginous clay of the Middle Devonian, near Louisville. Collection of the author.

FAVOSITES RADIATUS. *Devonian.*

2. Upper surface of a corallum from the Lower Devonian strata, Falls of the Ohio. Collection of the author.

FAVOSITES EMMONSI. *Devonian.*

3. Lateral view of a corallum from the Lower Devonian, Falls of the Ohio. Collection of the author.
4. Upper surface of a corallum from the same horizon and locality. Collection of the author.

PLATE 13.

FAVOSITES RADIATUS. *Devonian.*

Upper surface of a portion of a corallum, showing difference in size of the corallets; from the Lower Devonian, Falls of the Ohio. Collection of Mr. Gaines.

PLATE 13.

PLATE 14.

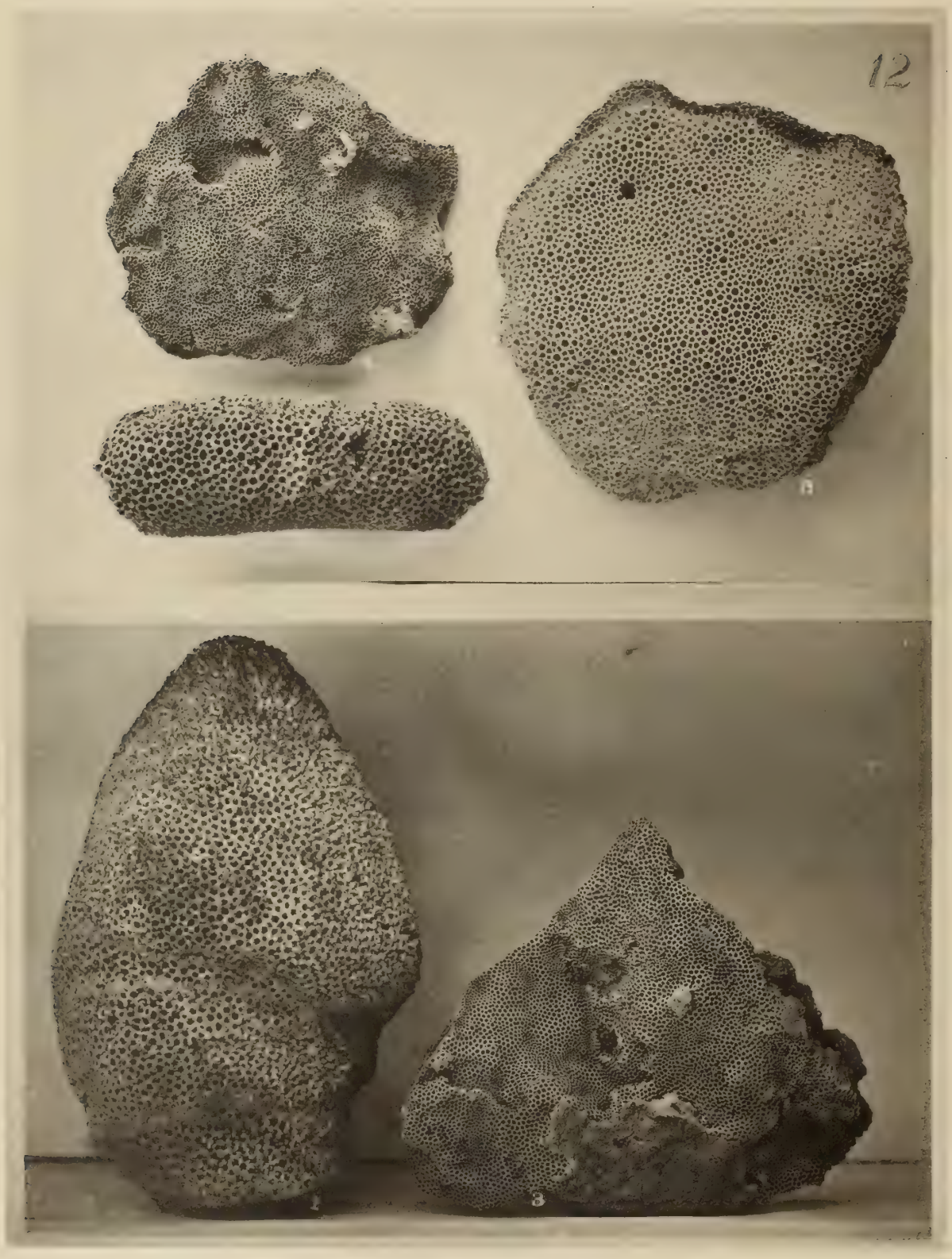


PLATE 14.

FAVOSITES PIRUM, Nov. Spec. *Devonian.*

1. Lateral view of a corallum from the Middle Devonian, Falls of the Ohio. Collection of the author.

2. Lateral view (prostrate) of a bacillate form from the same locality. Collection of the author.

FAVOSITES PLACENTA. *Devonian.*

3. Portion of a corallum from the dark red clay, derived from the encrinal limestone of the Upper Devonian, near Louisville. Collection of the author.

FAVOSITES ROTUNDITUBA, Nov. Spec. *Devonian.*

4. Upper surface of a corallum from the dark red clay of the Upper Devonian, underlying the shale beds, near Louisville. Collection of the author.

FAVOSITES MUNDUS, varietas PLACENTOIDEUS, Nov. Var. *Devonian.*

5. Upper surface of a corallum from the Lower Devonian, Falls of the Ohio. Collection of the author.

PLATE 15.

FAVOSITES PIRUM, Nov. Spec. *Devonian.*

1. Lateral view of a corallum from the blue clay of the Middle Devonian, Falls of the Ohio. Collection of the author.
2. Lateral view of a corallum from the same locality, showing a portion of the epithecated under surface and some of the corallets in longitudinal section. Collection of the author.
3. View of the epithecated under surface of a corallum; also showing the squamous walls of the corallets; from the ferruginous red clay of the Middle Devonian, near Louisville. Collection of the author.

FAVOSITES PROXIMUS, Nov. Spec. *Devonian.*

4. Lateral view (inverted) of a corallum from the Lower Devonian, Falls of the Ohio. Collection of the author.
5. Lateral view of a flexuous form from the same locality. Collection of the author.
6. Lateral view of a sub-ramous corallum from the same locality. Collection of the author.

FAVOSITES SPICULATUS, Nov. Spec. *Devonian.*

7. Upper surface of a corallum from the Lower Devonian, Falls of the Ohio. Collection of the author.

PLATE 15.

PLATE 16.

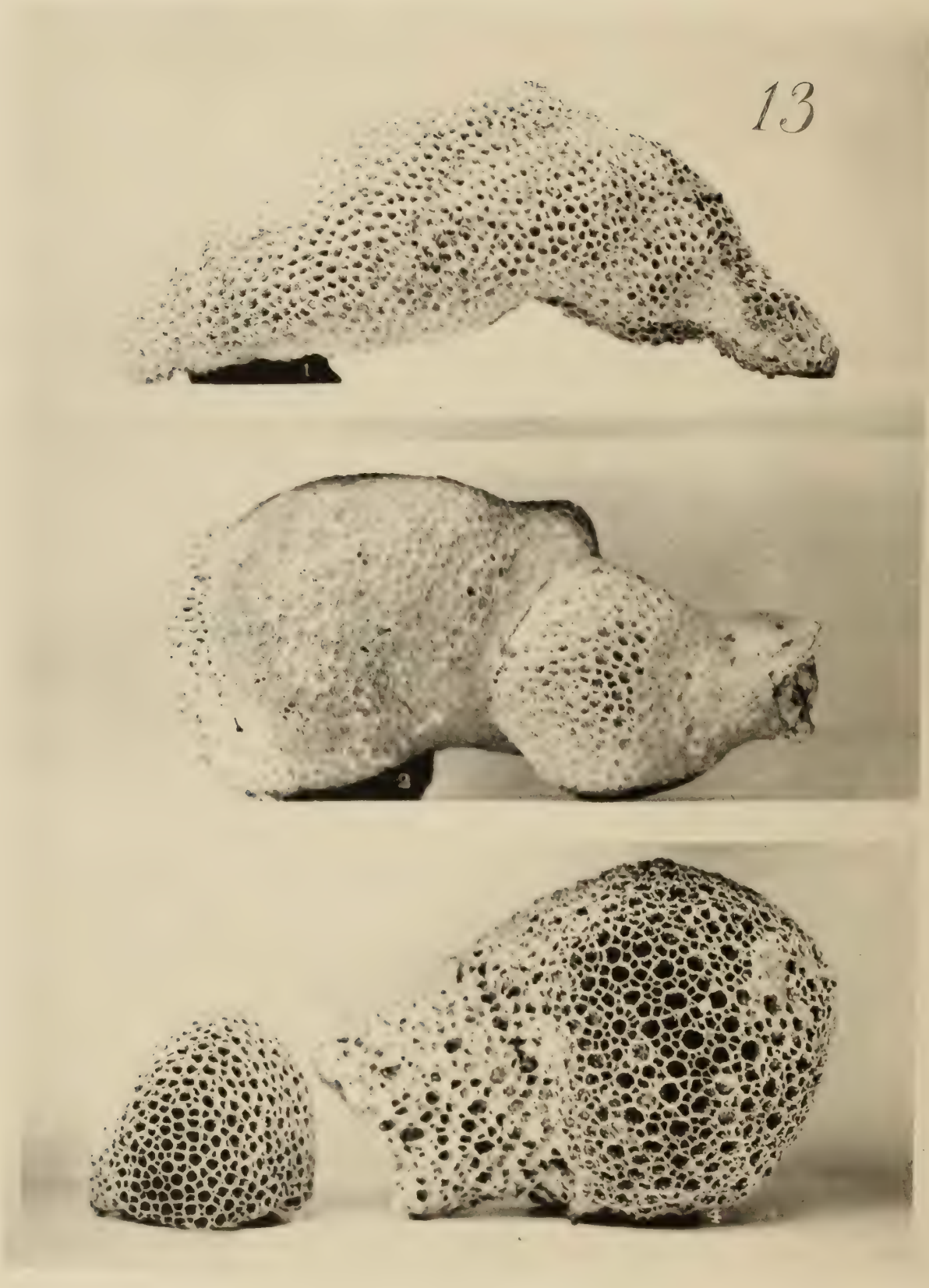


PLATE 16.

FAVOSITES TUBEROSUS. *Devonian.*

1. Lateral view (prostrate) of a corallum of typical shape from the Lower Devonian, Falls of the Ohio. Collection of the author.
2. Similar view of a corallum from the same locality and horizon, showing opercula closing the orifices of some of the corallets. Collection of Mr. Gaines.
3. Lateral view of upper portion of a specimen from the ferruginous clay of the Lower Devonian, near Louisville. Collection of the author.

FAVOSITES OCELLATUS, Nov. Spec. *Devonian.*

4. Lateral view (prostrate) of a corallum from the upper strata of the Lower Devonian, near Louisville. Collection of the author.

PLATE 17.

FAVOSITES AMPLISSIMUS, Nov. Spec. *Devonian.*

1. Upper surface of a corallum from the ferruginous clay of the Lower Devonian, near Louisville. Collection of Mr. Nettelroth.
2. View of a portion of the under surface of a corallum from the Lower Devonian, Falls of the Ohio. Collection of the author.
3. Upper surface of a corallum from the Lower Devonian, Falls of the Ohio. Collection of the author.

PLATE 17.

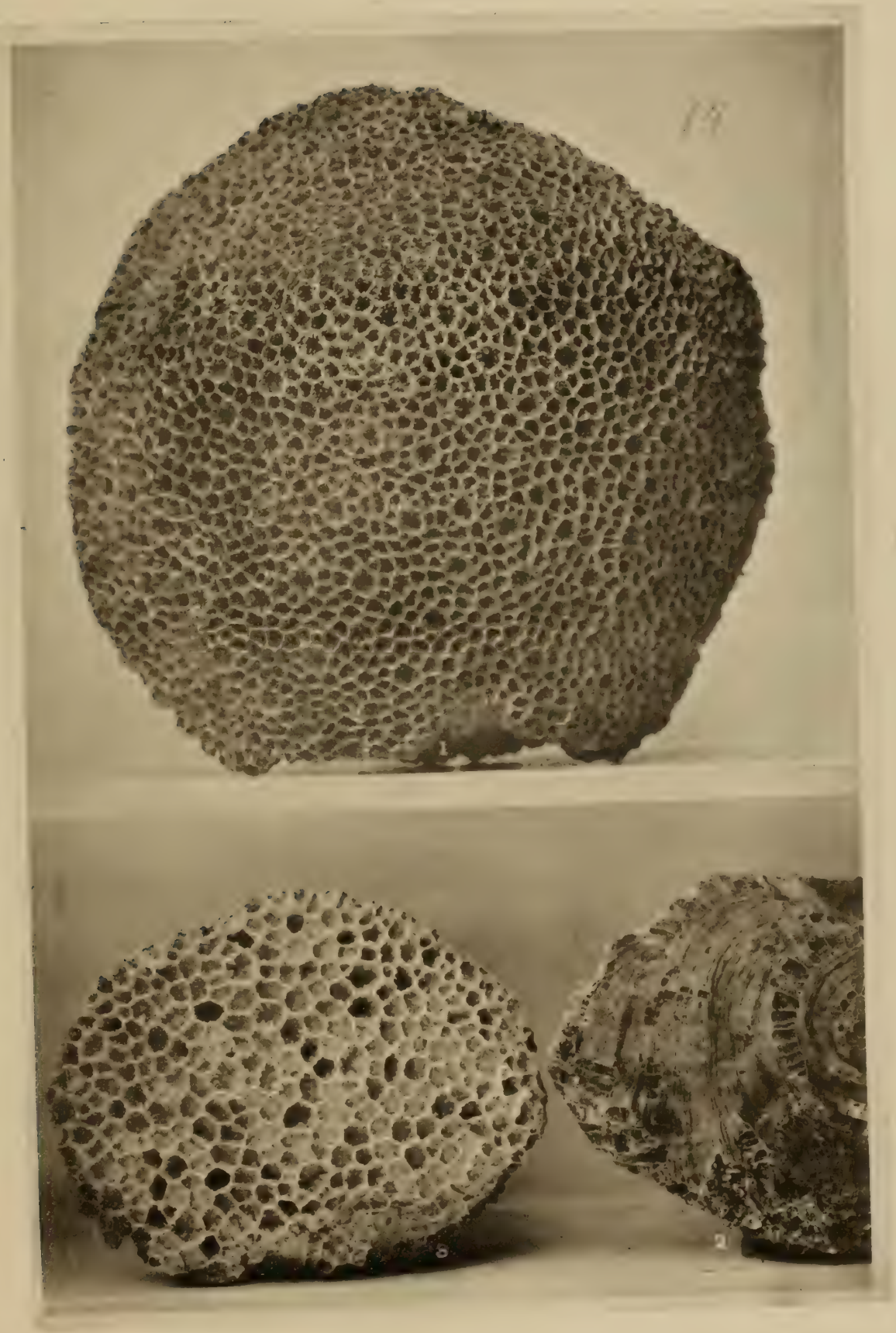


PLATE 18.

PLATE 18.

FAVOSITES QUERCUS, Nov. Spec. *Devonian.*

Lateral view of a corallum from the Lower Devonian strata, Falls of the Ohio. Collection of the author.

PLATE 19.

FAVOSITES QUERCUS, Nov. Spec. *Devonian.*

1. Lateral view of a corallum of medium size from the Lower Devonian, Falls of the Ohio. Collection of the author.

FAVOSITES RAMULOSUS, Nov. Spec. *Devonian.*

2. Views of two fronds from the upper portion of coralla from the Lower Devonian, Falls of the Ohio. Collection of the author.

FAVOSITES TUBEROSUS. *Devonian.*

3. Lateral view of a corallum of bacillate shape from the upper strata of the Lower Devonian, Falls of the Ohio. Collection of Mr. Nettelroth.

PLATE 19.

PLATE 20.

PLATE 20.

FAVOSITES RADICIFORMIS. *Devonian.*

1. Lateral view of a corallum, whose older corallets have their tubes closed by opercula; from the Lower Devonian, Falls of the Ohio. Collection of the author.
2. Lateral view (prostrate) of a corallum, split at the upper end so as to show a longitudinal section of the corallets; from the same horizon and locality. Collection of the author.
3. Lateral view of a jejune frond; corallets extraordinarily small; horizon two feet above that of examples 1 and 2; Falls of the Ohio. Collection of the author.

PLATE 21.

FAVOSITES BACULUS, Nov. Spec. *Devonian.*

1. 2. 3. Lateral views of three several coralla from the Lower Devonian, Falls of the Ohio. Zaphrentis exigua, it will be remarked, is attached to the matrix in which example 3 is imbedded. Collection of the author.

4. Longitudinal section of the upper portion of a small corallum from the same horizon and place. Collection of the author.

FAVOSITES DIGITATUS. *Devonian.*

5. Portion of a corallum from the dark red clay of the encrinal limestone underlying the shale which separates the Devonian and Sub-carboniferous formations, near Louisville. Collection of the author.

KENTUCKY GEOLOGICAL SURVEY.

PLATE 21.

PLATE 22.

PLATE 22.

FAVOSITES ARBOR, Nov. Spec. *Devonian.*

Lateral view of the upper fronds of a corallum twenty-eight inches long, from the Lower Devonian, Falls of the Ohio. The entire left frond is incrusted with Stromatopora granulata; on its end appears a basal expansion of Favosites limitaris. Collection of the author.

PLATE 23.

FAVOSITES ARBOR, Nov. Spec. *Devonian.*

1. Lateral view of a fragment of a frond from the Lower Devonian strata, Falls of the Ohio. Collection of Mr. McConathy.

FAVOSITES CYMOSUS, Nov. Spec. *Devonian.*

2. Lateral view of a corallum from the blue clay of the Middle Devonian, falls of the Ohio. Collection of the author.
3. Upper surface of a corallum from the Lower Devonian, Falls of the Ohio. Collection of the author.
4. Lateral view of a corallum from the same place and horizon as example 3. Collection of the author.
5. Lateral view (prostrate) of a "sprout," or cyme, of uncommonly elongated growth, from the horizon and locality of example 2. Collection of the author.

PLATE 23.

PLATE 24.

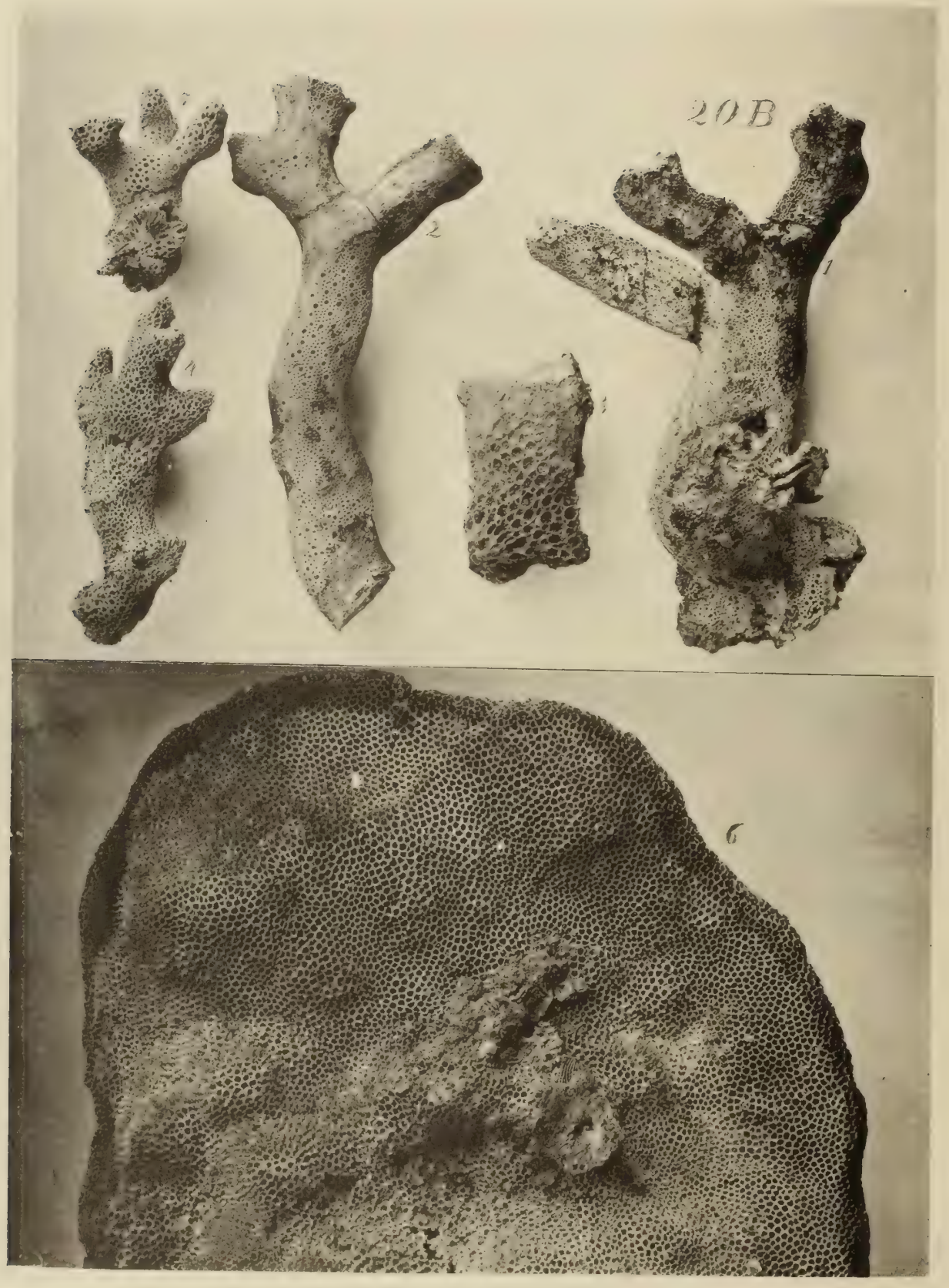


PLATE 24.

FAVOSITES FRUTEX, Nov. Spec. *Devonian.*

1. Lateral view of a corallum from the Lower Devonian strata, Falls of the Ohio. Collection of the author.
2. Upper portion of a frond from the same place and horizon. Collection of the author.

FAVOSITES CRISTATUS, varietas MAJOR. *Niagara.*

3. Lateral view of a fragment with squamous walls, from the white clay of the upper Niagara strata, near Louisville. Collection of Mr. McConathy.

FAVOSITES IMPEDITUS, Nov. Spec. *Devonian.*

4. 5. Lateral views of coralla from the Lower Devonian strata, Falls of the Ohio. Collection of the author.

FAVOSITES CLELANDI, Nov. Spec. *Devonian.*

6. View of a portion of the upper surface of a corallum from the Lower Devonian, Falls of the Ohio. Collection of the author.

PLATE 25.

FAVOSITES GOODWINI, Nov. Spec. *Devonian.*

The two examples in the lower right corner are coralla of compact, non-ramous growth. Lateral views of them are exhibited.

A view of the upper surface of a corallum is presented in the figure occupying the upper right corner.

The views offered by the other examples are lateral.

Found in the encrinal limestone, and the dark red clay derived therefrom, lying just below the shale of the Upper Devonian. Collection of the author.

PLATE 25.

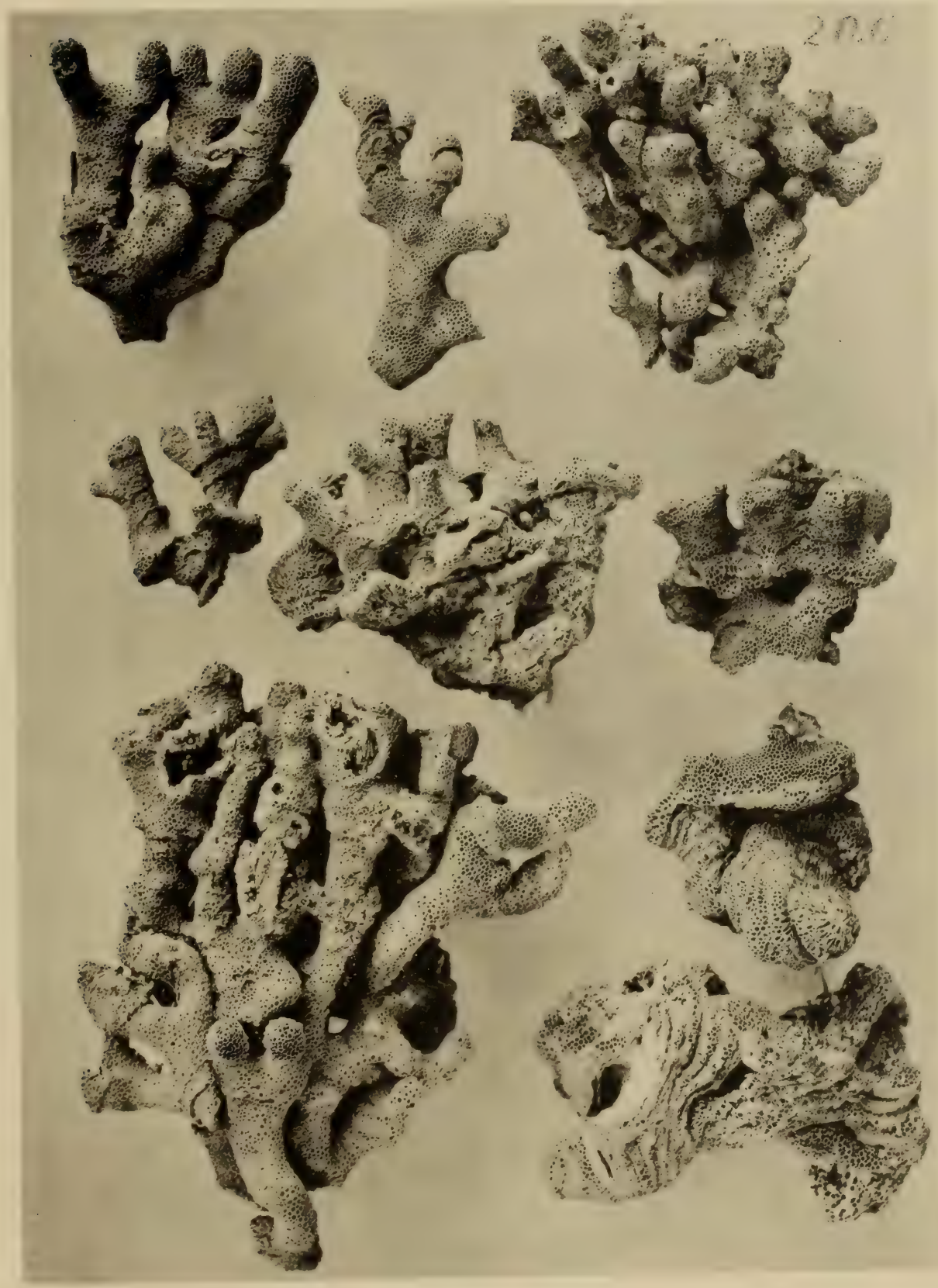


PLATE 26.

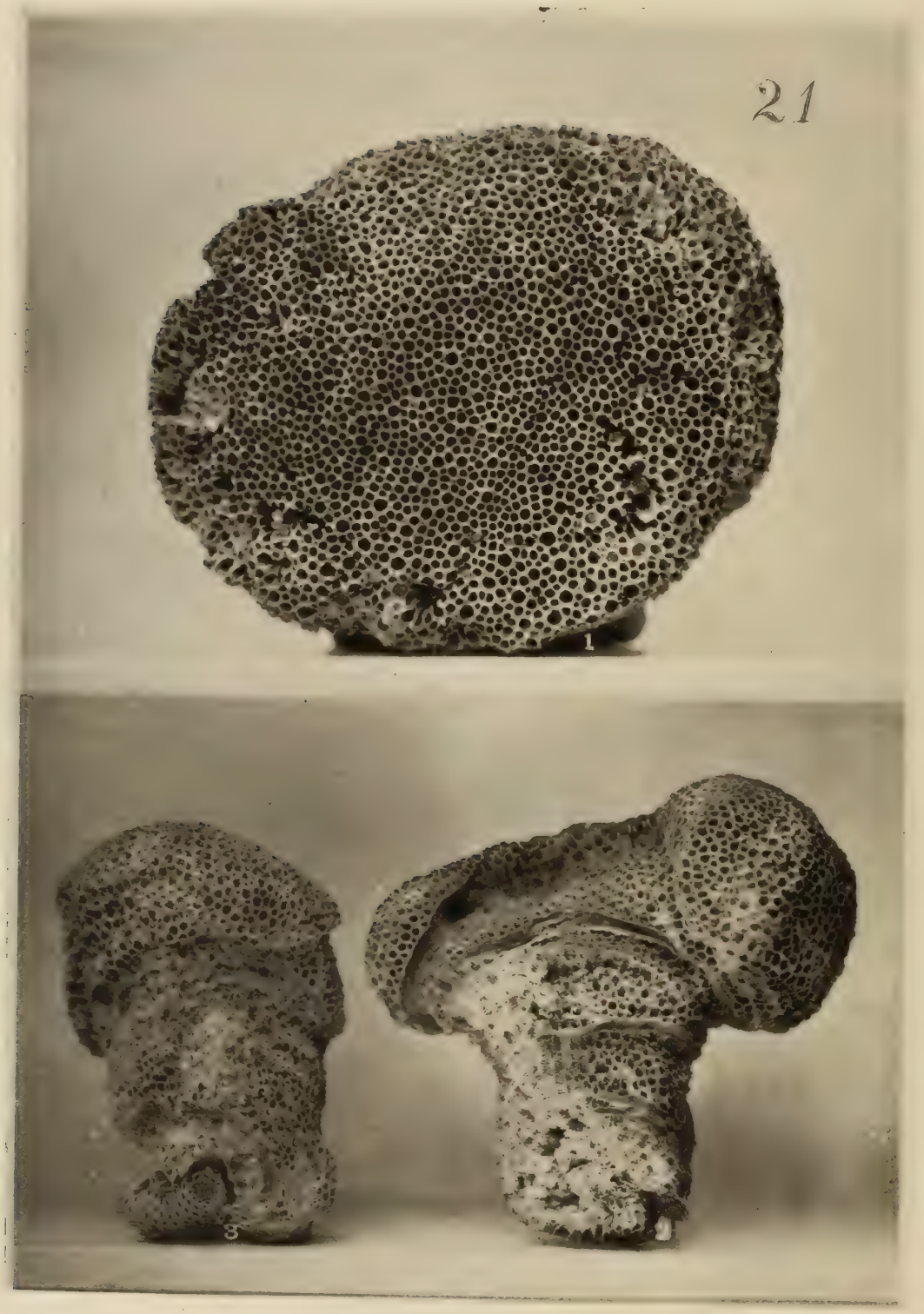


PLATE 26.

FAVOSITES EXIMIUS, Nov. Spec. *Devonian.*

1. Upper surface of a corallum from the dark red encrinal limestone clay of the Upper Devonian, near Louisville. Collection of the author.

FAVOSITES FUSTIFORMIS, Nov. Spec. *Devonian.*

2. Lateral view of a corallum, showing the tubes of some corallets in section and the epithecal secretion on the outside of walls where new departures of growth occur; from the Lower Devonian, Falls of the Ohio. Collection of the author.
3. Lateral view of a corallum, with base incrusting a fragment of a frond of Cladopora expatiata; from the horizon and locality of example 2. Collection of the author.

PLATE 27.

MICHELINIA INSIGNIS. *Devonian.*

1. View of the epithecated under surface of a corallum, showing the semi-cylindrical shape of the outer walls; to the left of the center several of the corallets become temporarily disjunct, but again unite with their neighbors by approximation; from the encrinal limestone clay of the Upper Devonian, near Louisville. Collection of the author.

FAVOSITES CONVEXUS, Nov. Spec. *Devonian.*

2. View of the under surface of a corallum from which the epitheca is removed so as to show the mural pores and squamous walls; from the ferruginous clay of the Lower Devonian, near Louisville. Collection of the author.
3. (Central small specimen.) View of the under surface of a small corallum, covered with a deeply-wrinkled epitheca; from the Lower Devonian, Falls of the Ohio. Collection of the author.

FAVOSITES MUNDUS, Nov. Spec. *Devonian.*

4. Upper surface of a corallum in which the larger sub-rotund tubes are more regularly recurring than is common; from the blue clay of the Middle Devonian, Falls of the Ohio. Collection of the author.

FAVOSITES ROTUNDITUBA, Nov. Spec. *Devonian.*

5. Upper surface of a corallum from the encrinal limestone clay just below the shale of the Upper Devonian, near Louisville. Collection of the author.

FAVOSITES PROXIMUS, Nov. Spec. *Devonian.*

6. Upper surface of a corallum of expanded discoidal shape, composed of corallets whose tubes are above average size; from the ferruginous clay of the Lower Devonian, near Louisville. Collection of Dr. Knapp.

FAVOSITES EXIMIUS, Nov. Spec. *Devonian.*

7. Lateral view of a corallum of turbinate form, from the dark red encrinal limestone clay of the Upper Devonian, near Louisville. Collection of the author.

PLATE 27.

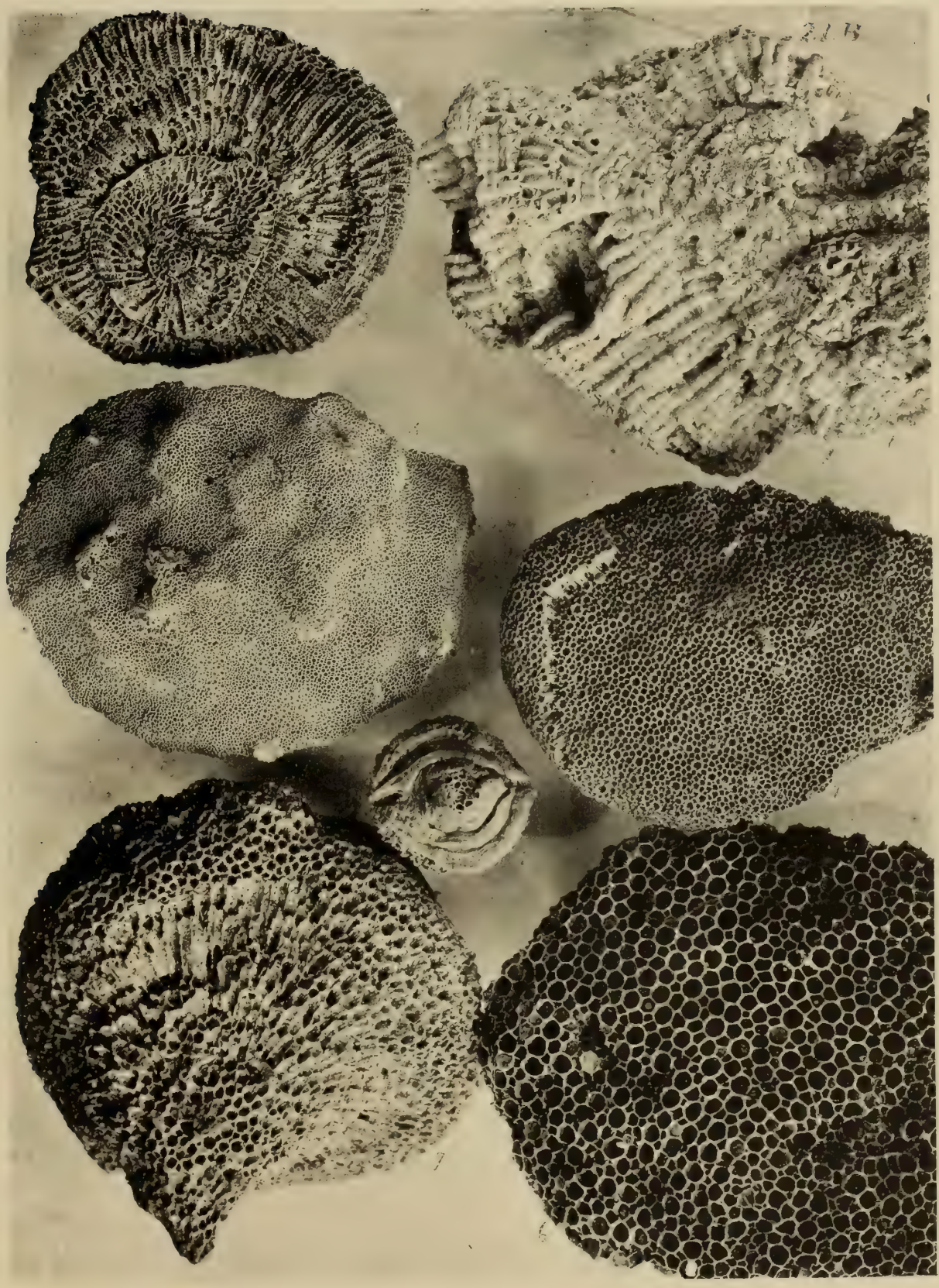


PLATE 28.

PLATE 28.

FAVOSITES MUNDUS, Nov. Spec. *Devonian.*

1. Upper surface of a corallum from the ferruginous clay of the Middle Devonian, near Louisville. Collection of the author.
2. Lateral view of a corallum, the tubes of many of whose corallets are closed with opercula; from the blue clay of the Middle Devonian, Falls of the Ohio. Collection of the author.

FAVOSITES PROXIMUS, Nov. Spec. *Devonian.*

3. Lateral view of a sub-ramous corallum, in some of whose tubes appear imperfect opercula; a basal expansion of Favosites clausus is attached to its upper portion; from the Lower Devonian strata, Falls of the Ohio. Collection of the author.

PLATE 29.

FAVOSITES CANADENSIS. *Devonian.*

1. 2. Upper surface of fragments of coralla having the common form, from the Lower Devonian, Falls of the Ohio. Collection of the author.

3. Lateral view of a corallum of rarely digitate growth, from the horizon and locality of the preceding examples. Collection of the author.

PLATE 29.

PLATE 30.

PLATE 30.

FAVOSITES LIMITARIS. *Devonian.*

Lateral view of a corallum (two thirds of the natural size) from the Lower Devonian, Falls of the Ohio. Collection of the author.

PLATE 31.

FAVOSITES LIMITARIS. *Devonian.*

1. Lateral view of the upper fronds of a corallum, partly freed from its matrix, in which the corallets at their orifices are more oblique to the axis than is common; from the Lower Devonian, Falls of the Ohio. Collection of Mr. McConathy.

FAVOSITES CARIOSUS, Nov. Spec. *Devonian.*

2. Front lateral view (prostrate) of the base and trunk of a corallum, from the ferruginous clay of the Lower Devonian, near Louisville. Collection of the author.

PLATE 31.

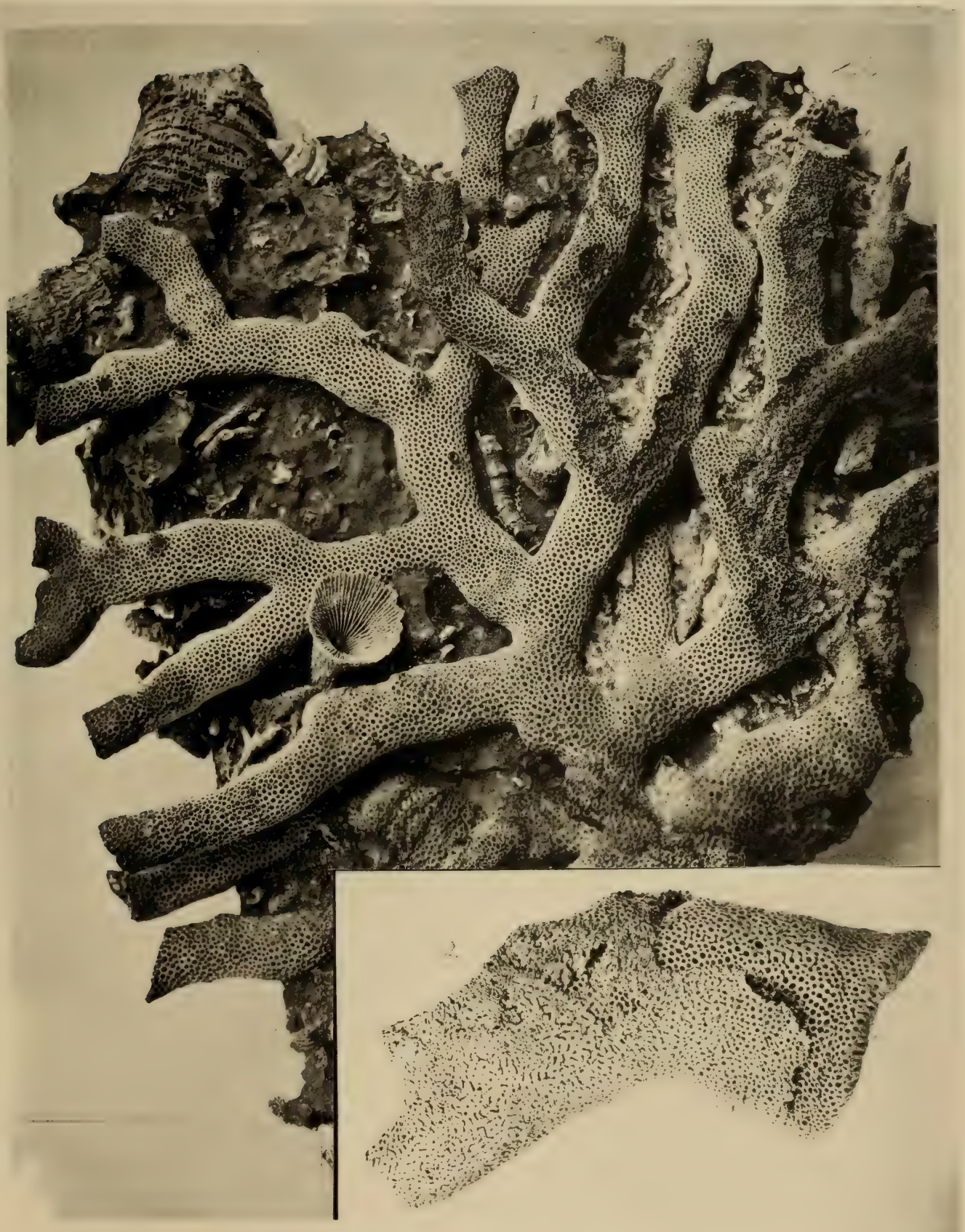


PLATE 32.

PLATE 32.

FAVOSITES CARIOSUS, Nov. Spec. *Devonian.*

1. Rear lateral view of the base and trunk of the example figured in Plate 31.
2. Rear lateral view of a typically marked fragment of a frond, artificially attached to the matrix of example 3 for delineation; from the horizon and locality of the preceding specimen. Collection of the author.
4. Front lateral view of a fragment from the Lower Devonian rocks, Falls of the Ohio. Collection of the author.

FAVOSITES INTERTEXTUS. *Devonian.*

3. Lateral views of portions of fronds imbedded in the matrix, from the Lower Devonian, Falls of the Ohio. Collection of Dr. Knapp.

FAVOSITES EMMONSI. *Devonian.*

5. Vertical section of a fragment (prostrate) showing the squamous tubes and incomplete tabulæ proper to the species; from the Lower Devonian, near Louisville. Collection of Dr. Knapp.

MICHELINIA CYLINDRICA. *Devonian.*

6. Longitudinal section of a fragment showing the complicated sub-vesicular tabulæ; from the blue clay of the Middle Devonian, Falls of the Ohio. Collection of Dr. Knapp.

PLATE 33.

FAVOSITES CAVERNOSUS. *Devonian.*

1. Lateral view of the base and fronds of a nearly perfect corallum, from the Middle Devonian, Falls of the Ohio. Collection of the author.
2. Well preserved fragment from the same horizon, east of Louisville. Collection of the author.
3. 4. 5. Fragments such as are commonly obtained, with walls abnormally incrassated; from the encrinal limestone clay of the Upper Devonian, near Louisville. Collection of the author.

PLATE 33.

PLATE 34.

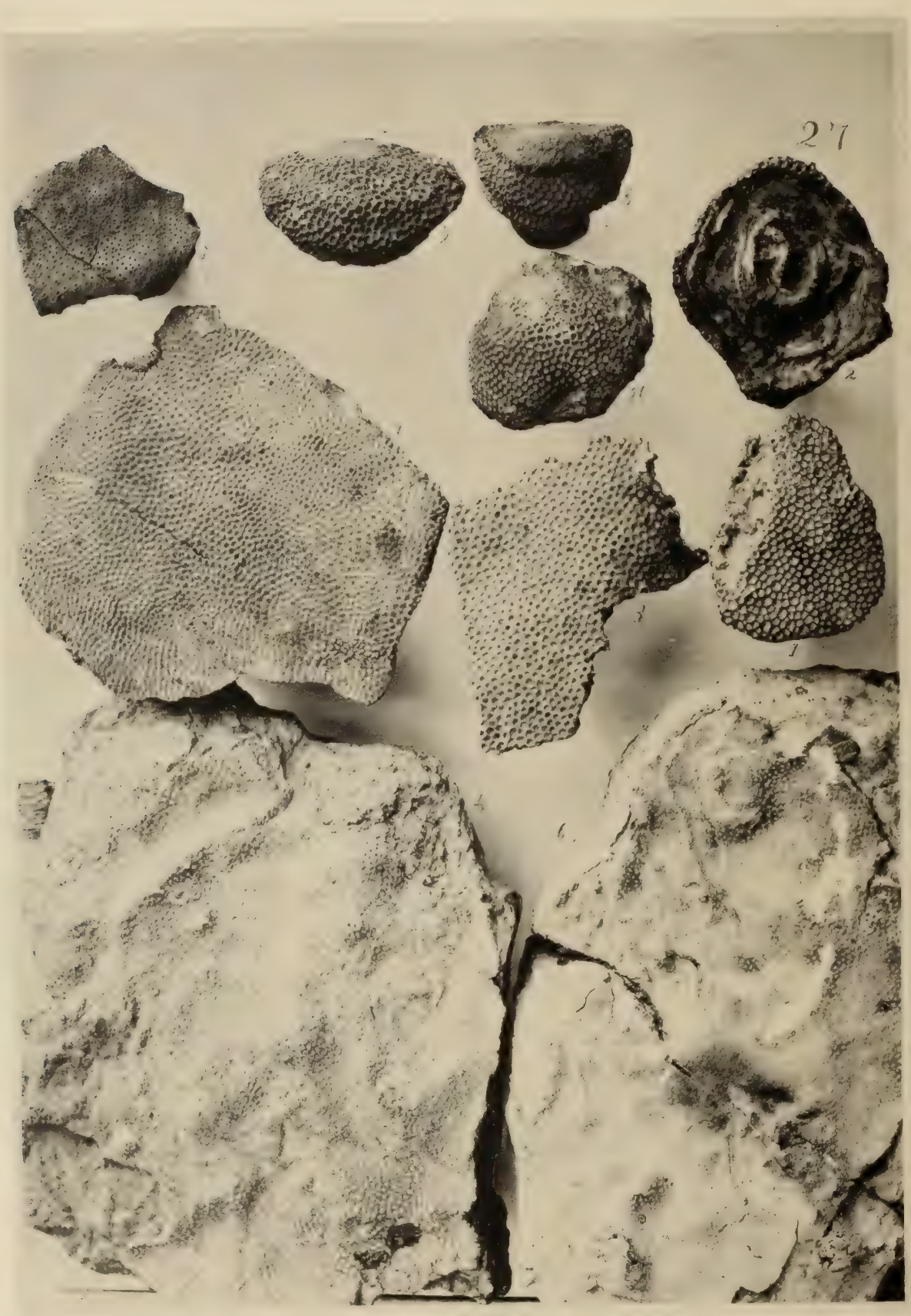


PLATE 34.

THECIA MAJOR. *Niagara.*

1. Upper surface of a corallum, gathered from its rock matrix twenty-five feet below the Niagara and Devonian passage-beds, near Louisville. Collection of the author.
2. Under surface of a corallum, covered with an epitheca, from the white clay five feet below the passage-beds, near Louisville. Collection of the author.
3. Upper surface of a fragment from the ferruginous clay of the Upper Niagara strata, near Louisville. Collection of the author.

THECIA MINOR. *Niagara.*

4. Upper surface of a portion of a corallum from the upper white clay beds, near Louisville. Collection of the author.
7. Upper surface of calcified tube-casts of a corallum [Labechia conferta].

THECIA SWINDERNANA. *Niagara.*

5. Upper surface of a fragment from the upper red clay strata, near Louisville. Collection of Mr. Nettelroth.
6. Upper surface of portion of a corallum from the white clay eight feet below the passage-beds, near Louisville. Collection of the author.

THECIA VETUSTA. *Hudson River Group.*

8. Upper surface of a corallum incrusting Streptorhyncus planumbonus, near Milton, Ky. Collection of the author.
9. 10. Similar views of coralla from the same horizon and locality. Collection of Mr. Nettelroth.

PLATE 35.

THECIA RAMOSA. *Devonian.*

1. Lateral view of a nearly perfect corallum from the Lower Devonian, Falls of the Ohio. Collection of the author.

[NOTE.—The apex of growth of this example is just above the figure 1.]

2. Upper portion of a frond (inverted) from the same horizon and place. Collection of the author.

PLATE 35.

PLATE 36.

PLATE 36.

MICHELINIA CYLINDRICA. *Devonian.*

Upper surface of a corallum from the red clay of the Middle Devonian, near Louisville. Collection of the author.

PLATE 37.

MICHELINIA FAVOSITOIDEA. *Devonian.*

Upper surface of a corallum from the blue clay of the Middle Devonian Falls of the Ohio. Collection of the author.

[NOTE.—With a lens of low power observe the papillose surface of the tabulæ and of the walls, the latter dotting the longitudinal ridges. The author recommends the use of a double-convex lens, with a power of about two diameters, in examining all the illustrations of this work. Viewed with such a lens, all characteristic structural details will appear as they seem in the fossil itself, and "an atmosphere" so invests the figure that it may be studied almost as advantageously as the natural object.]

PLATE 37.

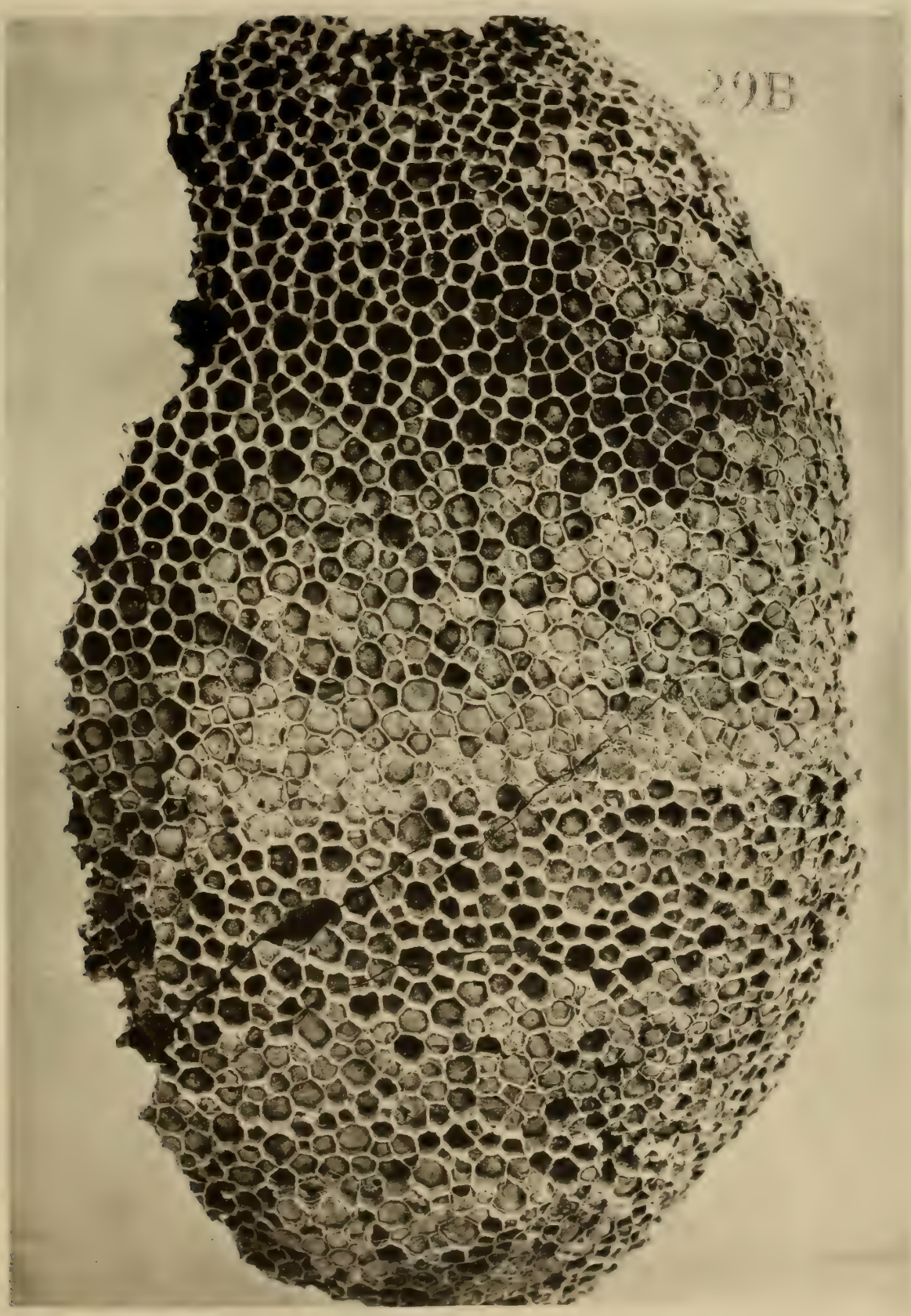
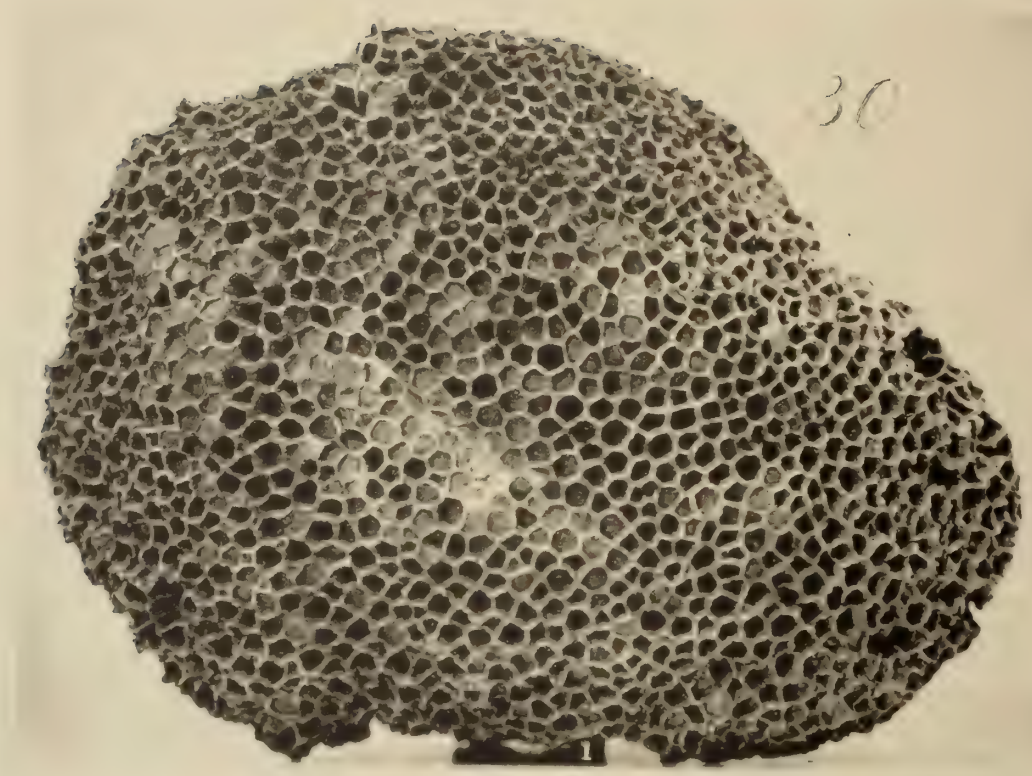


PLATE 38.



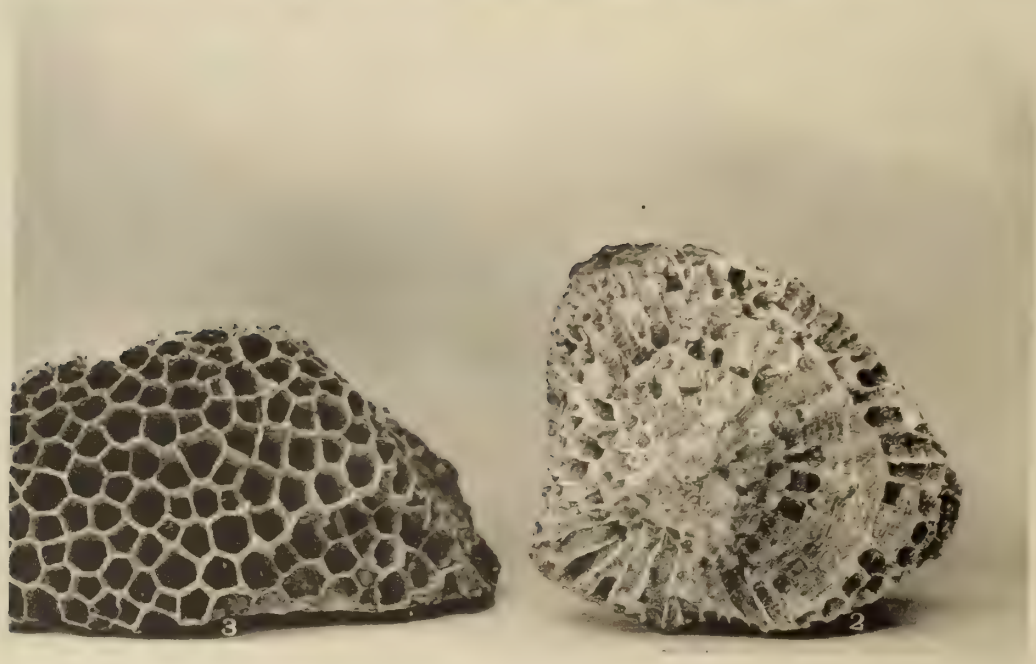


PLATE 38.

MICHELINIA PLANA, Nov. Spec. *Devonian.*

1. Upper surface of a corallum from the encrinal limestone clay of the Upper Devonian, near Louisville. Collection of the author.
2. Under surface of a corallum, with epitheca partially preserved, from the yellow clay of the Upper Devonian, near Crab Orchard, Ky. Collection of the author.

MICHELINIA FAVOSITOIDEA. *Devonian.*

3. Upper surface of a fragment from the red clay of the Middle Devonian, near Louisville. Collection of the author.

PLATE 39.

MICHELINIA CORRUGATA, Nov. Spec. *Devonian.*

1. Upper surface of a corallum from the Middle Devonian, Falls of the Ohio. Collection of the author.

MICHELINIA NIAGARENSIS, Nov. Spec. *Niagara.*

2. Portion of the upper surface of a corallum from the Upper Niagara white clay, near Louisville. Collection of the author.

MICHELINIA PRIMA, Nov. Spec. *Niagara.*

3. Upper surface of a weathered specimen, in which the walls of the several corallets are seen separated; from the white clay of the Upper Niagara, near Louisville. Collection of the author.

4. Artificially attached to Figure 6 is a corallum whose lateral view showing epitheca is presented. Not photographed satisfactorily on account of its color. From the same horizon, near Louisville, as example 3. Collection of the author.

5. Upper surface of a fragment showing tube-walls delicately spinulous, in exquisite preservation; from the same horizon and place as the preceding example. Collection of Mr. McConathy.

MICHELINIA PLANA, Nov. Spec. *Devonian.*

6. Lateral view of a corallum from the dark red clay beds derived from the encrinal limestone of the Upper Devonian, near Louisville. Collection of the author.

MICHELINIA INSIGNIS. *Devonian.*

7. Upper surface of a corallum whose corallets have thinner walls than the average specimen; from the encrinal limestone clay of the Upper Devonian, near Louisville. Collection of the author.

PLATE 39.

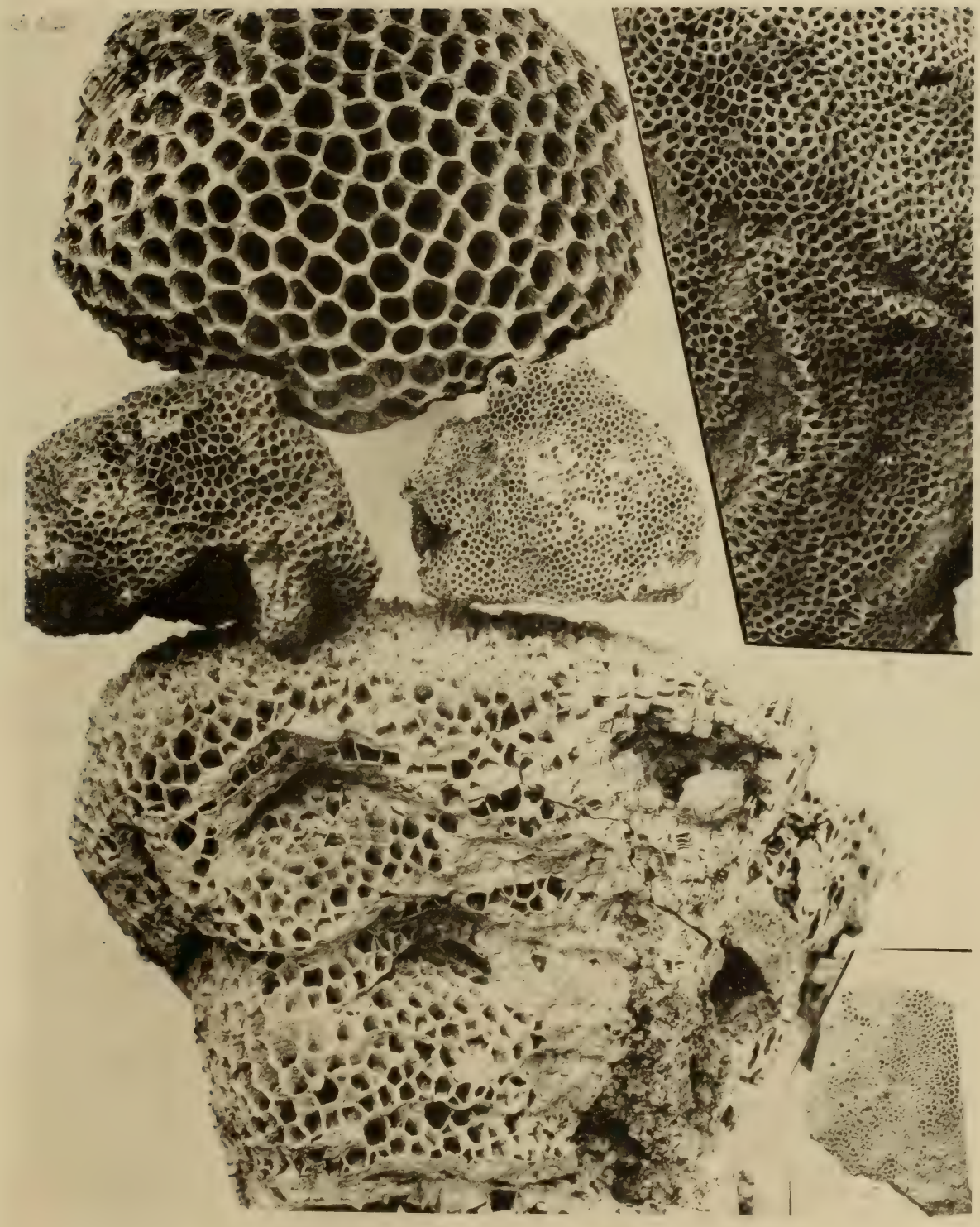


PLATE 40.

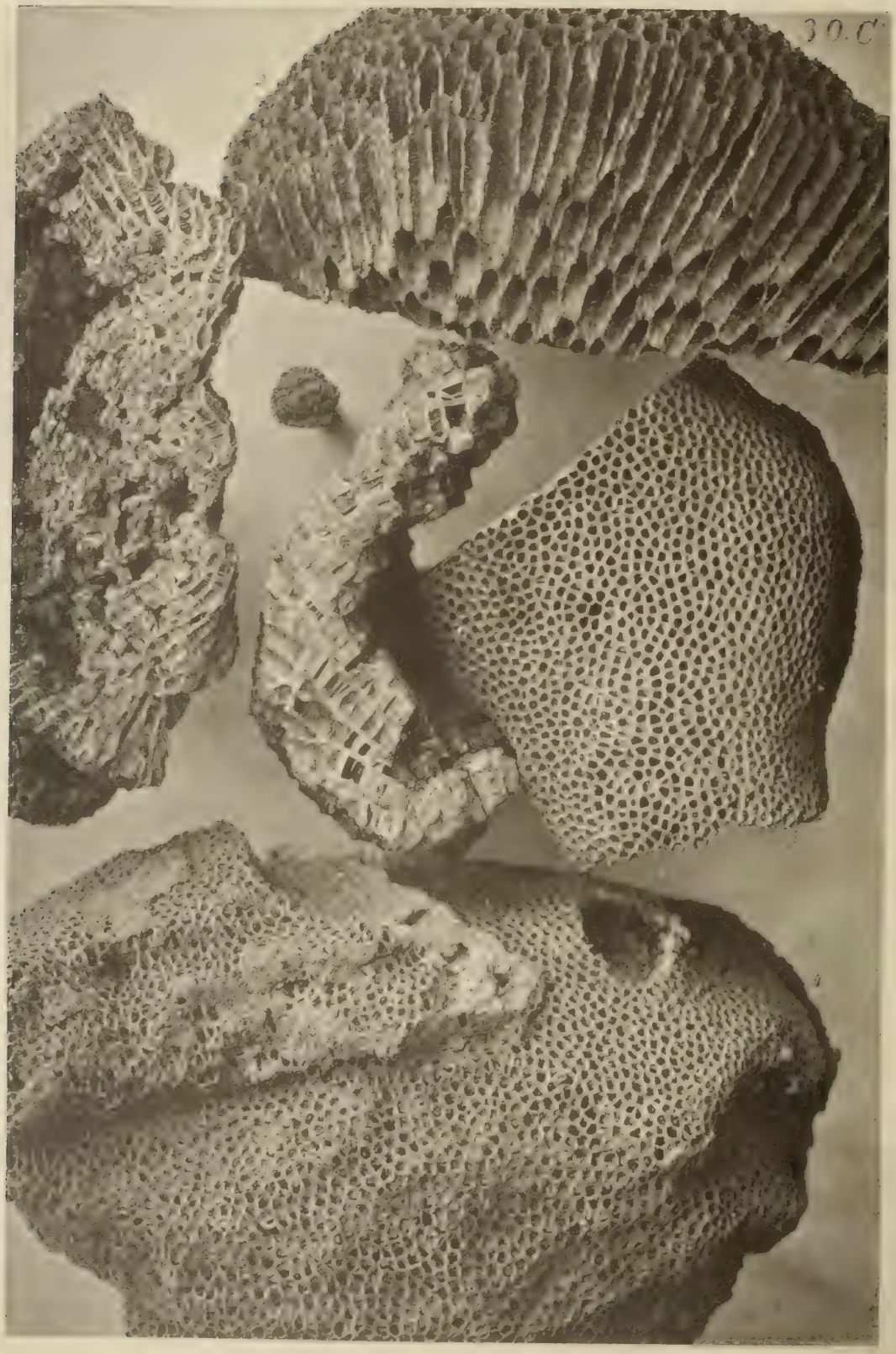


PLATE 40.

MICHELINIA PRIMA, Nov. Spec. *Niagara.*

1. Under surface of corallum previously figured in Plate 39; Fig. 4.

MICHELINIA PLANA, Nov. Spec. *Devonian.*

2. Longitudinal section of a fragment from which the tabulæ are removed so as to show the mural pores; from the encrinal limestone clay of the Upper Devonian, near Louisville. Collection of the author.
3. Longitudinal section of a fragment showing tabulæ; from the horizon and locality of the preceding example. Collection of the author.

MICHELINIA INSIGNIS. *Devonian.*

4. Oblique view of the upper surface of a corallum, from the encrinal limestone clay of the Upper Devonian, near Louisville. Collection of the author.
5. Upper surface of a corallum from the horizon and locality of example 4. Collection of the author.
6. Vertical section of a corallum, showing tabulæ, from the same horizon and locality as the preceding examples. Collection of the author.

PLATE 41.

MICHELINIA CLAPPI. *Devonian.*

1. Vertical section of a fragment, showing the tabulate septa extraneous to the corallets' walls; from the ferruginous clay of the Middle Devonian, near Louisville. Collection of the author.
2. Upper surface of a fragment from the same horizon as example 1, near Louisville. Collection of the author.

PROCTERIA (NOV. GEN.) MICHELINOIDEA, N. S. *Devonian.*

3. 4. Upper surfaces of coralla.
5. Lateral view of a corallum.
6. Under surface of a corallum, showing the papillose exothecal secretion.
7. 9. Under surfaces of fragments, showing the radiation of corallets from the central apex.
10. Under surface of a corallum, from which a portion of the papillose exothecal secretion is removed, so as to show the mural pores perforating the epitheca.
12. 13. 14. Views of tube-casts and pore-casts similar to those observed in Pleurodictyum problematicum.

All the above examples are from the decomposed hornstone of the Middle Devonian, Falls of the Ohio. Collection of the author.

8. Under surface of a fragment from the limestone on which rests the uppermost chert layer of the Middle Devonian, Falls of the Ohio. Collection of Mr. Gaines.
11. Under surface of a corallum from which a portion of the exothecal layer has been removed, so as to disclose a tube-cast beneath; from the horizon and locality of example 3. Collection of Mr. McConathy.

PROCTERIA PAPILLOSA, NOV. SPEC. *Devonian.*

15. Upper surface of a corallum, showing papillose exothecal layer surmounting the corallets' walls.
16. Under surface of a corallum, showing papillose exothecal secretion and the concave margins of the outer walls of the prostrate corallets.
17. Lateral view of a corallum.
19. Upper surface of a small corallum with thinner walls than the average.
18. 20. 21. Under surfaces of coralla.

All the forms of this species have been found in the decomposed chert of the Middle Devonian, Falls of the Ohio. The examples figured are from the collection of the author.

PLATE 41.

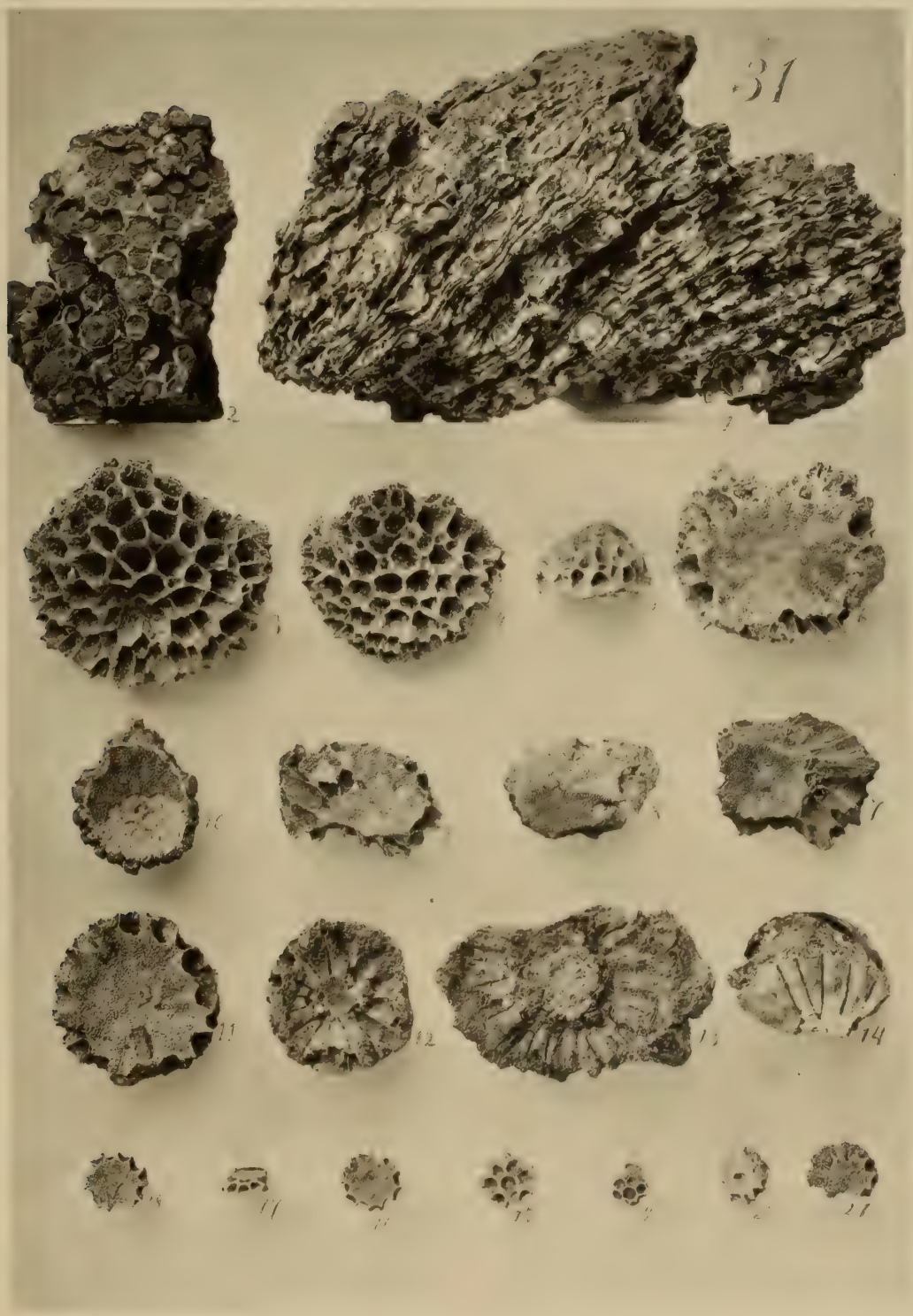


PLATE 42.

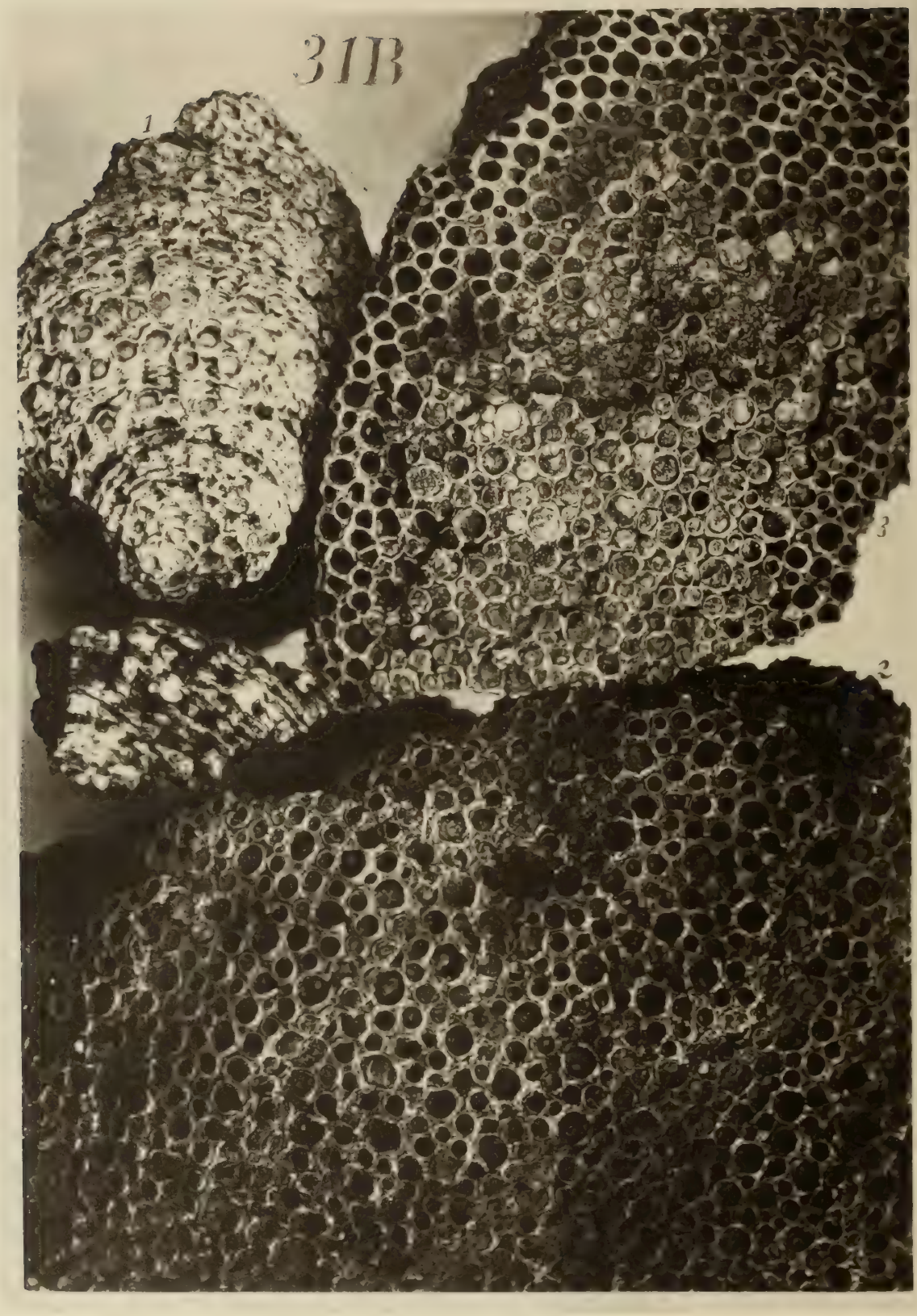


PLATE 42.

MICHELINIA CLAPPI. *Devonian.*

1. Oblique lateral view of a corallum from the blue clay of the Middle Devonian, Falls of the Ohio.
2. Upper surface of a corallum from the same locality and horizon.
3. Upper surface of a corallum from the ferruginous clay of the Middle Devonian, near Louisville.
4. Lateral view of the example figured in Plate 41, Fig. 2.

The specimens figured are from the collection of the author.

PLATE 43.

ALVEOLITES CONSTANS, Nov. Spec. *Devonian.*

1. Lateral view of a corallum from the red clay of the Lower Devonian, near Louisville. Collection of the author.

ALVEOLITES SQUAMOSUS. *Devonian.*

2. 3. Upper surfaces of coralla from the horizon of the preceding species, near Louisville. Collection of the author.

ALVEOLITES MINIMUS, Nov. Spec. *Devonian.*

4. Lateral view of a corallum from the Lower Devonian strata, Falls of the Ohio. Collection of the author.

PLATE 43.

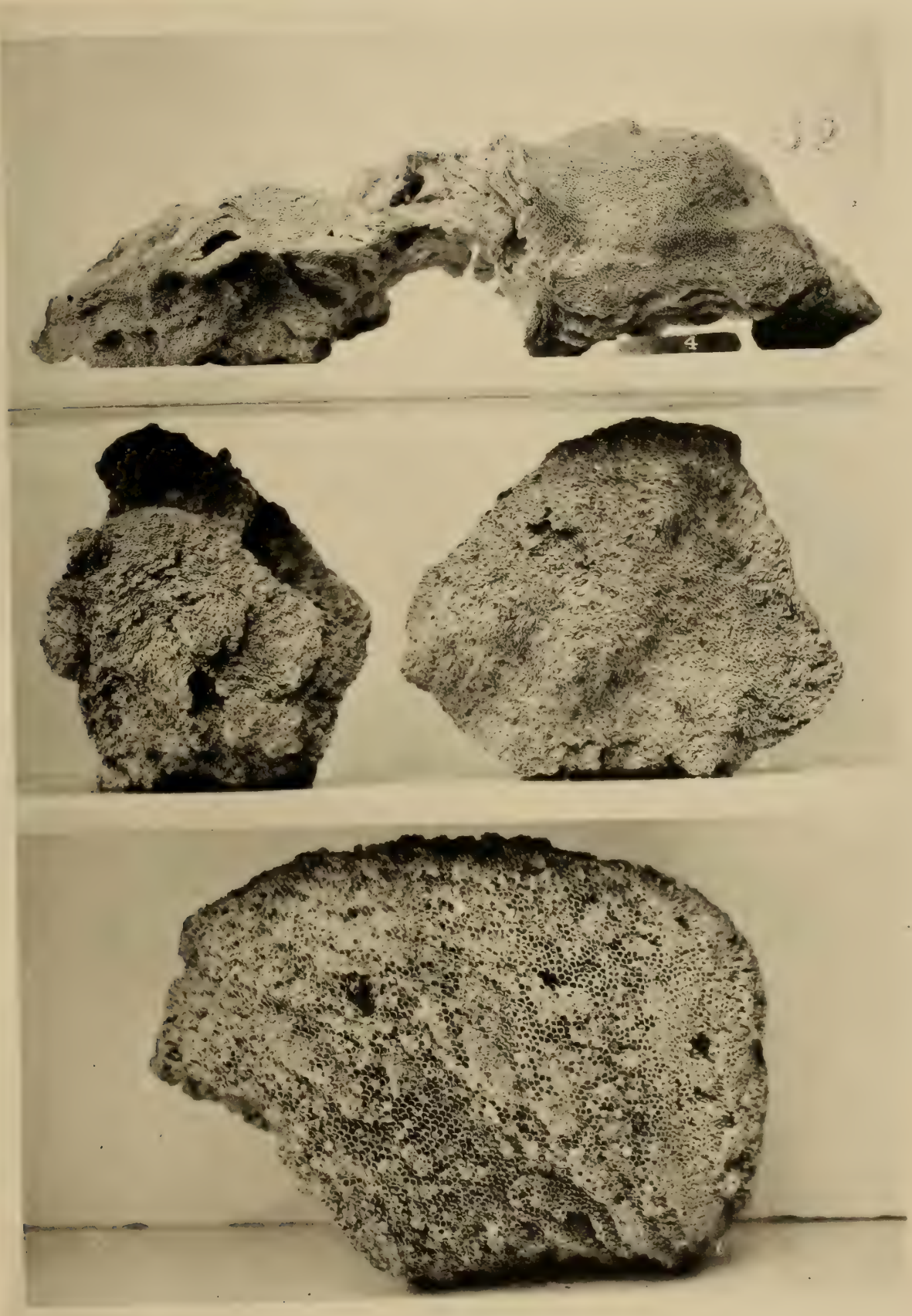


PLATE 44.

PLATE 44.

ALVEOLITES SCANDULARIS, Nov. Spec. *Devonian.*

1. Upper surface of a fragment of a corallum from the encrinal limestone clay of the Upper Devonian, near Louisville. Collection of the author.

ALVEOLITES GOLDFUSSI. *Devonian.*

2. Upper surface of a corallum from the horizon of A. scandularis (Fig. 1), near Louisville. Collection of the author.

ALVEOLITES MINIMUS, Nov. Spec. *Devonian.*

3. Upper surface of a corallum from the Lower Devonian rocks, Falls of the Ohio. Collection of the author.

PLATE 45.

ALVEOLITES MORDAX, Nov. Spec. *Devonian.*

1. Upper surface of a corallum from the ferruginous clay of the Lower Devonian, near Louisville. Collection of the author.
2. Lateral view of a small corallum, with corallets of the smallest size, from the same horizon, near Louisville. Collection of the author.

PLATE 45.

PLATE 46.

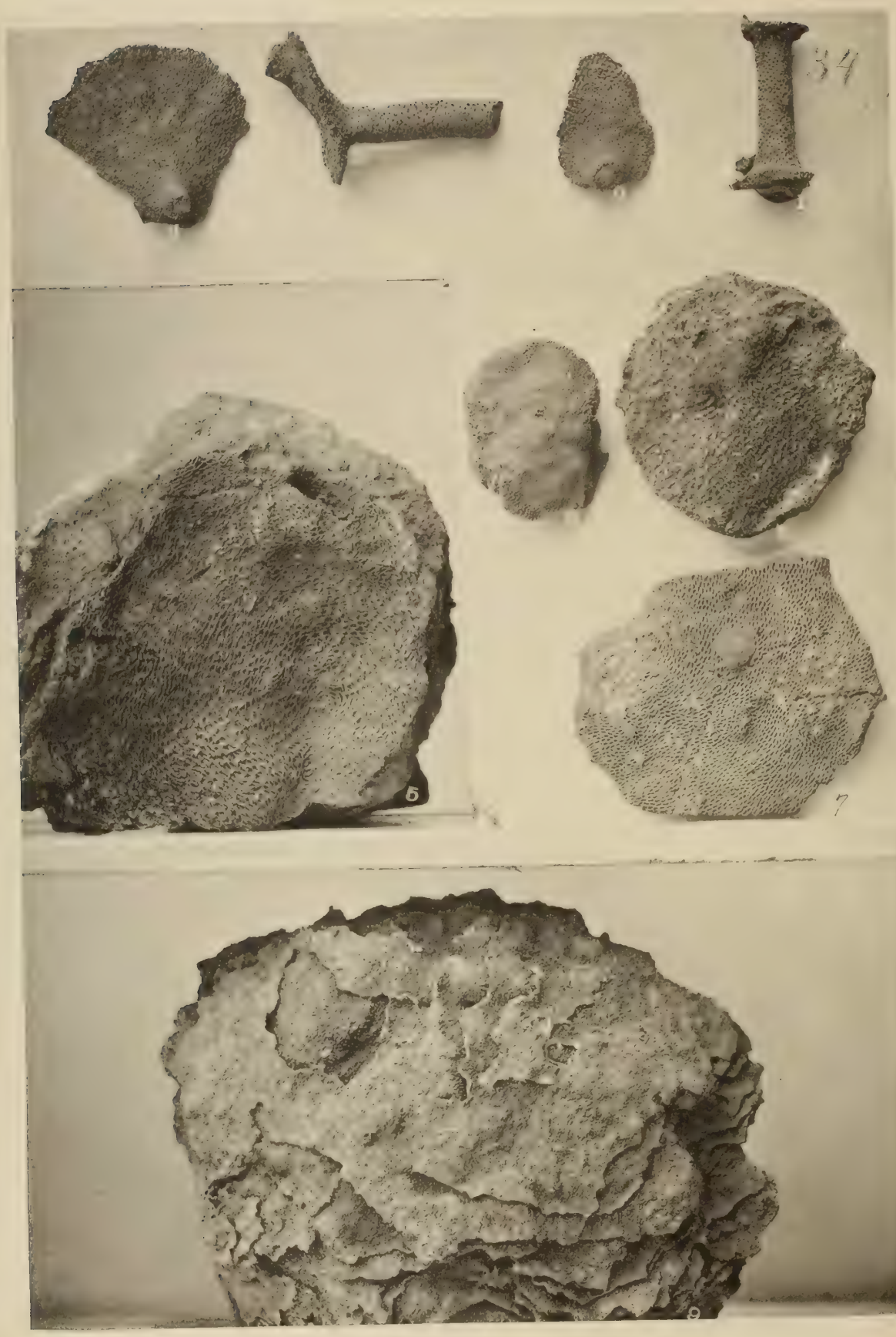


PLATE 46.

Cœnites verticillata. *Niagara.*

1. Lateral view of the cylindrical portion of a corallum.
3. Lateral view (prostrate) of the cylindrical portion of a corallum, with a verticillate expansion.
2. 4. Under surfaces of expanded verticillate plates.

These examples are from the ferruginous clay of the Upper Niagara, near Louisville. Collection of the author.

Alveolites louisvillensis, Nov. Spec. *Niagara.*

5. Upper surface of a corallum from the white clay of the Upper Niagara, near Louisville. Collection of Mr. Nettelroth.
6. Upper surface of a weathered corallum, from the same horizon and locality. Collection of the author.

Alveolites niagarensis. *Niagara.*

7. Upper surface of a fragment from the Upper Niagara white clay, near Louisville. Collection of Mr. McConathy.

Alveolites fibrosus, Nov. Spec. *Niagara.*

8. Upper surface of a corallum from the Upper Niagara clay, near Louisville. Collection of the author.

Milleria (Nov. Gen.) laminata, Nov. Spec. *Niagara.*

9. Oblique view of the upper surface and side of a corallum, showing the successive thin laminar expansions; from the Upper Niagara ferruginous clay, near Louisville. Collection of the author.

PLATE 47.

CLADOPORA RETICULATA. *Niagara.*

1. Lateral view of a corallum from the Upper Niagara white clay, thirteen feet below the Niagara and Devonian passage-beds, near Louisville. Collection of the author.
2. View of a corallum, with its apex of growth centrally situated, and its fronds radiating in all directions therefrom; found in the horizon of example 1, near Louisville. Collection of Mr. Nettelroth.

PLATE 47.

PLATE 48.

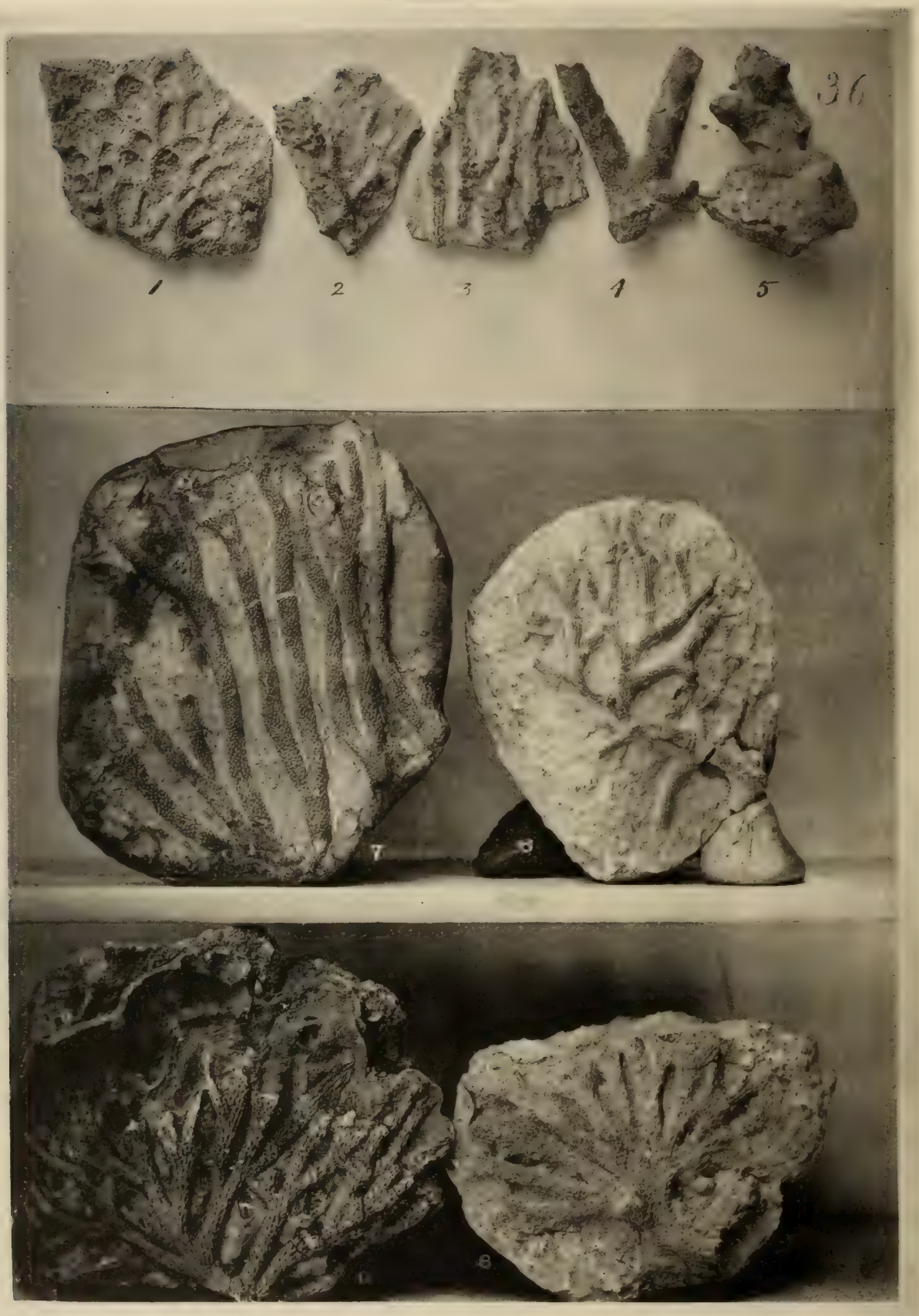


PLATE 48.

CLADOPORA ACULEATA, Nov. Spec. *Niagara.*

1. Lateral view of a fragment from the Upper Niagara white clay, near Louisville. Collection of the author.

CLADOPORA ORDINATA, Nov. Spec. *Niagara.*

2. Lateral view of a small fragment from the same horizon as C. aculeata, near Louisville. Collection of the author.

CLADOPORA PROBOSCIDALIS, Nov. Spec. *Niagara.*

3. Lateral view of a fragment from the same horizon and place as the preceding species. Collection of the author.

CLADOPORA MENIS, Nov. Spec. *Niagara.*

4. Lateral view of the upper portion of a frond showing the trichotomous branching; from the horizon and neighborhood of the examples preceding. Collection of the author.
5. Pedicle of a corallum with a portion of the trunk; from the horizon and place of example 4. Collection of the author.

CLADOPORA STRIATA, Nov. Spec. *Niagara.*

6. Lateral view of several fronds of a corallum, from the horizon of the above examples. Collection of Mr. Nettelroth.

CLADOPORA EQUISETALIS, Nov. Spec. *Niagara.*

7. Several fronds springing from the same base; from the same horizon as the above. Collection of Mr. Nettelroth.

CLADOPORA LAQUEATA. *Niagara.*

8. Corallum, pedicle wanting, from the Upper Niagara white clay, near Louisville. Collection of the author.
9. Nearly entire corallum from the Upper Niagara red clay, near Louisville. Partly invested by Stromatopora concentrica. Collection of Mr. Nettelroth.

PLATE 49.

CLADOPORA COMPLANATA, Nov. Spec. *Niagara.*

1. Lateral view (half inverted) of a portion of a frond from the Upper Niagara white clay, near Louisville. Collection of Dr. Knapp.

CLADOPORA ACULEATA, Nov. Spec. *Niagara.*

2. Lateral view (half inverted) of a portion of a corallum, from the horizon and place where the preceding specimen was gathered. Collection of Dr. Knapp.

SYRINGOPORA TUBIPOROIDES. *Devonian.*

3. Section of several corallets, partly imbedded in the rock matrix, showing the conical invaginating diaphragms; from the Lower Devonian rocks, Falls of the Ohio. Collection of Dr. Knapp.

FAVOSITES CLAUSUS. *Devonian.*

4. Portion of a corallum from the Lower Devonian rocks, Falls of the Ohio. Collection of the author.

PLATE 49.

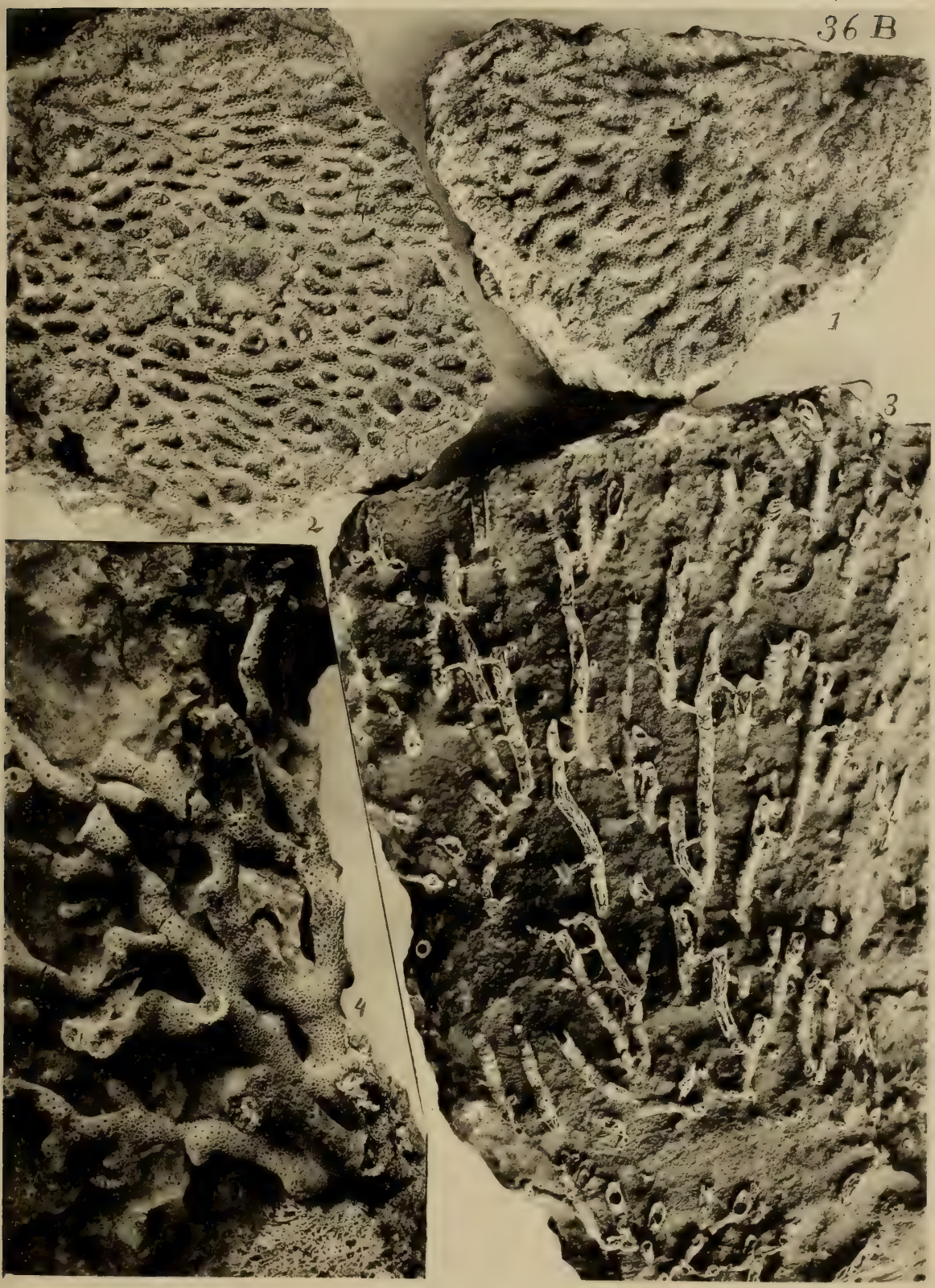


PLATE 50.

PLATE 50.

CLADOPORA ASPERA. *Devonian.*

1. Front lateral view of a corallum from the Lower Devonian rocks, Falls of the Ohio. Collection of the author.

CLADOPORA EXPATIATA. *Devonian.*

2. Portions of fronds with part of pedicle, from the ferruginous clay of the Lower Devonian, near Louisville. Collection of the author.
3. Front lateral view of a corallum (prostrate) from the Lower Devonian, Falls of the Ohio. Collection of the author.

PLATE 51.

CLADOPORA DENTATA, Nov. Spec. *Devonian.*

1. Under surface of basal expansion and rear lateral view of portions of fronds of a corallum from the Lower Devonian, Falls of the Ohio. Collection of Dr. Knapp.

CLADOPORA FRANCISCI, Nov. Spec. *Devonian.*

2. Front Lateral view of fragment from the Lower Devonian, Falls of the Ohio. Collection of Dr. Knapp.

STRIATOPORA HURONENSIS. *Niagara.*

3. Fragment imperfectly freed from the matrix; from the Upper Niagara white clay, near Louisville. Collection of Dr. Knapp.

ERIDOPHYLLUM SENTUM, Nov. Spec. *Niagara.*

4. Lateral view of a fragment from the ferruginous clay of the Upper Niagara, near Louisville. Collection of Dr. Knapp.

LYELLIA PUELLA, Nov. Spec. *Niagara.*

5. Upper surface of a corallum from the Upper Niagara white clay, near Louisville. Collection of Dr. Knapp.

NICHOLSONIA (Nov. Gen.) CANADENSIS. *Devonian.*

6. Corallum incrusting Spirifera oweni, from the red clay of the Middle Devonian, near Louisville. Collection of Dr. Knapp.

PLATE 51.

PLATE 52.

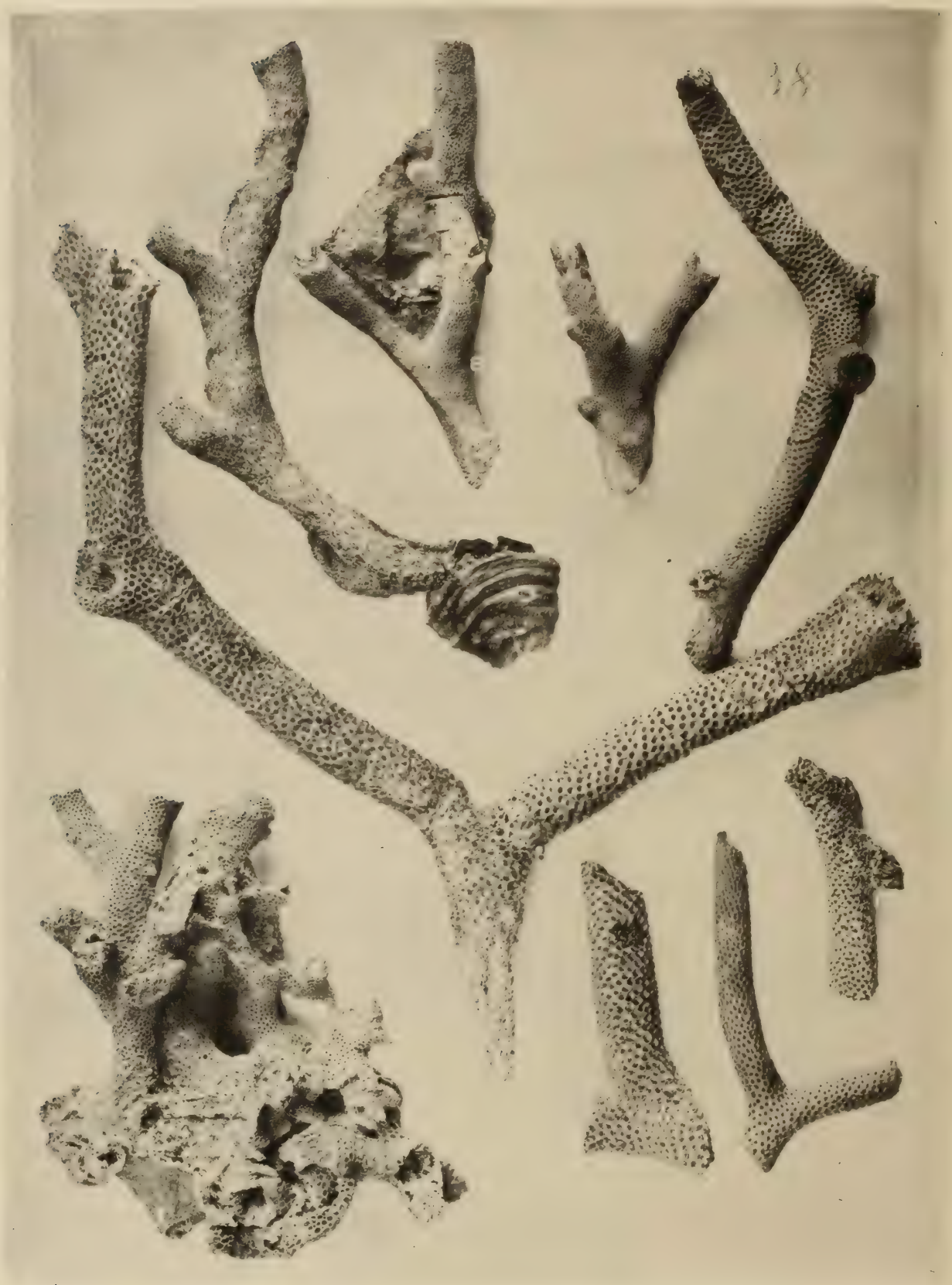


PLATE 52.

CLADOPORA BIFURCA, Nov. Spec. *Devonian.*

1. Portion of a corallum investing Favosites ramulosus, from the Lower Devonian, Falls of the Ohio. Collection of the author.

CLADOPORA CRYPTODENS. *Devonian.*

2. Dichotomously branching example, from the Lower Devonian, Falls of the Ohio. Collection of the author.
3. Frond (inverted) from the same horizon and locality. Collection of the author.
4. Fragment from the ferruginous clay of the Lower Devonian, near Louisville. Collection of the author.

CLADOPORA BILLINGSI. *Devonian.*

5. Fragment (inverted) from the Lower Devonian clay, near Louisville. Collection of the author.

CLADOPORA ALPENENSIS. *Devonian.*

6. Fragment from the horizon and place of example 5.

CLADOPORA ACUPICTA, Nov. Spec. *Devonian.*

7. 8. Portions of fronds from the Lower Devonian, Falls of the Ohio. Collection of the author.

CLADOPORA DESQUAMATA, Nov. Spec. *Devonian.*

9. Portion of a corallum with its pedicle attached to the interior of the calyx of Zaphrentis ungula, from the Lower Devonian, Falls of the Ohio. Collection of the author.

PLATE 53.

CLADOPORA IMBRICATA. *Devonian.*

1. 2. 3. Fronds of different sizes and modes of growth.
4. Pedicle of a corallum from which fronds are beginning to spring.

The examples are from the Lower Devonian, Falls of the Ohio, and belong to the collection of the author.

PLATE 53.

PLATE 54.

PLATE 54.

CLADOPORA PINGUIS. *Devonian.*

1. Front lateral view of a corallum from the Lower Devonian, Falls of the Ohio.
2. Basal expansion with portions of fronds, from the red clay of the Middle Devonian, near Louisville.
3. Basal expansion with portions of fronds, from the encrinal limestone dark red clay of the Upper Devonian, near Louisville.

CLADOPORA RŒMERI. *Devonian.*

4. 5. 6. Fragments found in the red clay of the Lower Devonian, near Louisville.

The examples figured in this Plate belong to the collection of the author.

PLATE 55.

CLADOPORA PINGUIS. *Devonian.*

1. Front lateral view of a corallum from the Lower Devonian, Falls of the Ohio. Collection of Dr. Knapp.
2. Upper surface of a basal expansion, showing corallets of different sizes; from the ferruginous clay of the Lower Devonian, near Louisville. Collection of the author.
3. Front lateral view of the pedicle with portions of fronds, showing differently sized corallets; from the horizon and neighborhood of example 2. Collection of the author.

CLADOPORA RŒMERI. *Devonian.*

4. Fragment from the Lower Devonian red clay, near Louisville. Collection of Dr. Knapp.

PLATE 55.

PLATE 56.

PLATE 56.

CLADOPORA RŒMERI. *Devonian.*

1. Corallum (prostrate) partly imbedded in its matrix; from the Lower Devonian strata, Falls of the Ohio. Collection of the author.

CLADOPORA BIFURCA, Nov. Spec. *Devonian.*

2. Upper fronds of a corallum partly imbedded in its rock matrix; from the Lower Devonian, Falls of the Ohio. Collection of the author.

PLATE 57.

CLADOPORA TELA, Nov. Spec. *Devonian.*

1. Front lateral view of a portion of the base and fronds of a nearly perfect corallum, from the Middle Devonian rocks, Falls of the Ohio. Collection of the author.

CLADOPORA FIBRATA, Nov. Spec. *Devonian.*

2. Front lateral view of the reticulating fronds of a fragment, from the Lower Devonian, Falls of the Ohio. Collection of the author.

PLATE 57.

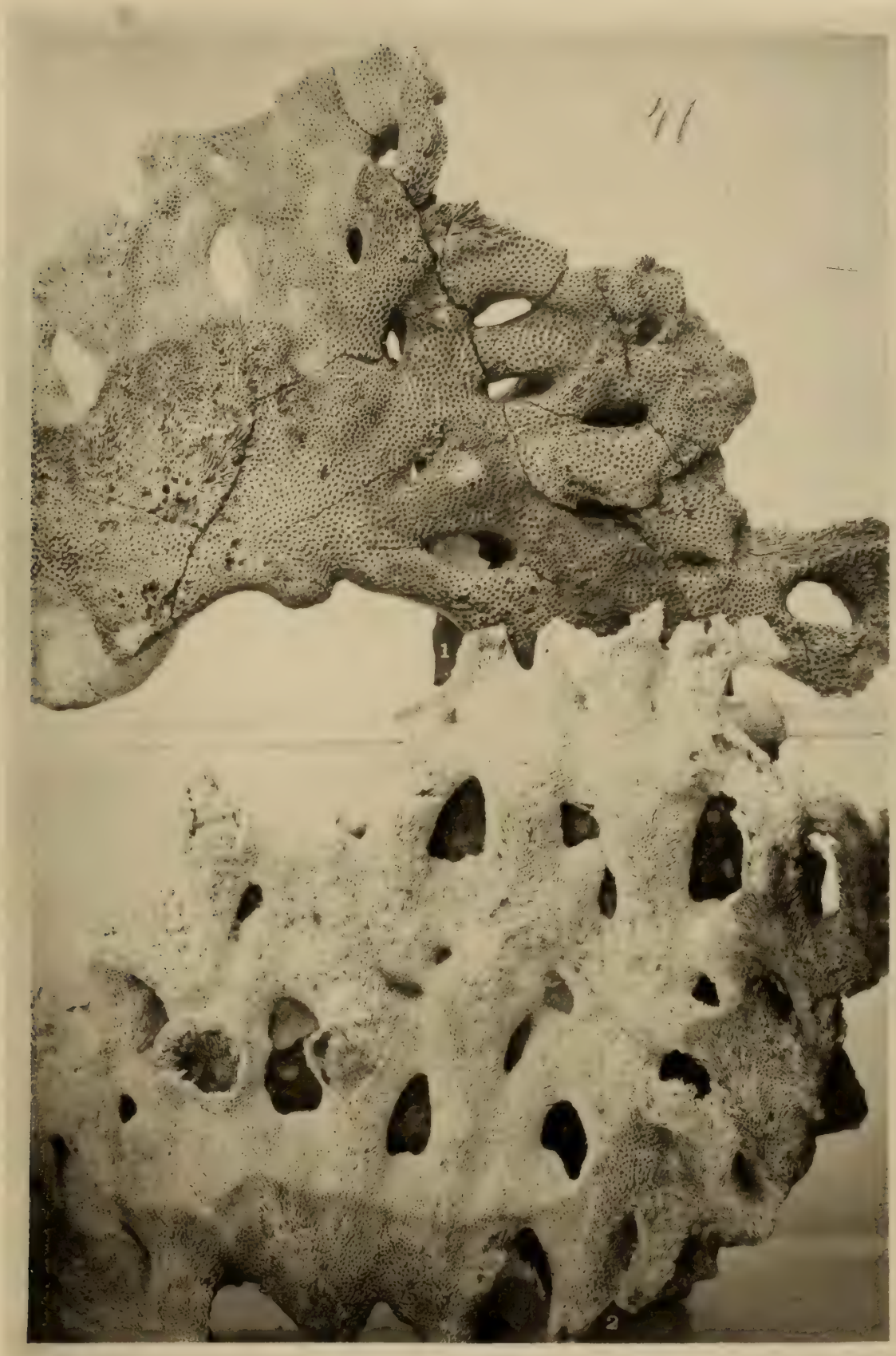


PLATE 58.

PLATE 58.

CLADOPORA RADULA, Nov. Spec. *Devonian.*

1. (Upper specimen.) Front Lateral view of a corallum, pedicle wanting, invested by Stromatopora texilis; from the Lower Devonian, Falls of the Ohio. Collection of the author.

CLADOPORA ROBUSTA. *Devonian.*

2. Front lateral view (prostrate) of a frond from the Lower Devonian, Falls of the Ohio. Collection of the author.

CLADOPORA ACUPICTA, Nov. spec. *Devonian.*

3. (Lower specimen.) Fronds (inverted) partly imbedded in rock matrix. Projecting from the matrix, in the lower right corner, are the terminal branches of a frond of Favosites ramulosus. A calyx of Ptychophyllum coniferum appears in the same matrix. From the Lower Devonian, Falls of the Ohio. Collection of the author.

PLATE 59.

CLADOPORA RIMOSA. *Devonian.*

1. Front lateral view of a corallum commensally attached to Stromatopora texilis; from the manganese limestone of the Lower Devonian, Falls of the Ohio. Collection of the author.
2. Fragment from the blue clay of the Middle Devonian, Falls of the Ohio. Collection of the author.
3. (Upper central specimen.) Pedicle with parts of fronds from the red clay of the Middle Devonian, near Louisville. Collection of the author.

CLADOPORA LABIOSA. *Devonian.*

4. 5. (Specimens above and to the left of 3.) Fronds from the red clay of the Middle Devonian, near Louisville. Collection of the author.

CLADOPORA ALPENENSIS. *Devonian.*

6. (Upper left corner.) Trichotomously ramous frond from the blue clay of the Middle Devonian, Falls of the Ohio. Collection of the author.

CLADOPORA PULCHRA. *Devonian.*

7. (Lower specimen.) Fronds partly imbedded in rock matrix, from the Lower Devonian, Falls of the Ohio. Collection of Mr. McConathy.

PLATE 59.

PLATE 60.

PLATE 60.

PLATYAXUM (Nov. Gen.) TURGIDUM. *Devonian.*

1. 2. Fragments showing front lateral views, from the Lower Devonian, Falls of the Ohio.

PLATYAXUM (Nov. Gen.) FISCHERI. *Devonian.*

3. Fragment showing front lateral view, from the Lower Devonian, Falls of the Ohio.

PLATYAXUM (Nov. Gen.) CANADENSE. *Devonian.*

4. Front lateral view of fragment from the Lower Devonian, Falls of the Ohio.

5. Rear lateral view of fragment from dark-red encrinal limestone clay of the Upper Devonian, near Louisville.

PLATYAXUM (Nov. Gen.) UNDOSUM, Nov. Spec. *Devonian.*

6. Front lateral view of a fragment from the Lower Devonian, Falls of the Ohio.

The examples herein figured belong to the collection of the author.

PLATE 61.

CLADOPORA DISPANSA, Nov. Spec. *Devonian.*

1. Upper surface of a cymous corallum from the Lower Devonian, Falls of the Ohio.
2. Lateral view of a cyme of unusual altitude, from the horizon and neighborhood of example 1.
3. Under surface of a fragment of typical growth, from the horizon and vicinage of examples 1 and 2.

PLATYAXUM (Nov. Gen.) CORIOIDEUM, Nov. Spec. *Devonian.*

4. Front lateral view (prostrate) of a portion of a frond from the Lower Devonian, Falls of the Ohio. The inner walls of the corallets of the rear side are seen springing from the plane axis in the left lower corner of the specimen.

These specimens belong to the private collection of the author.

PLATE 61.

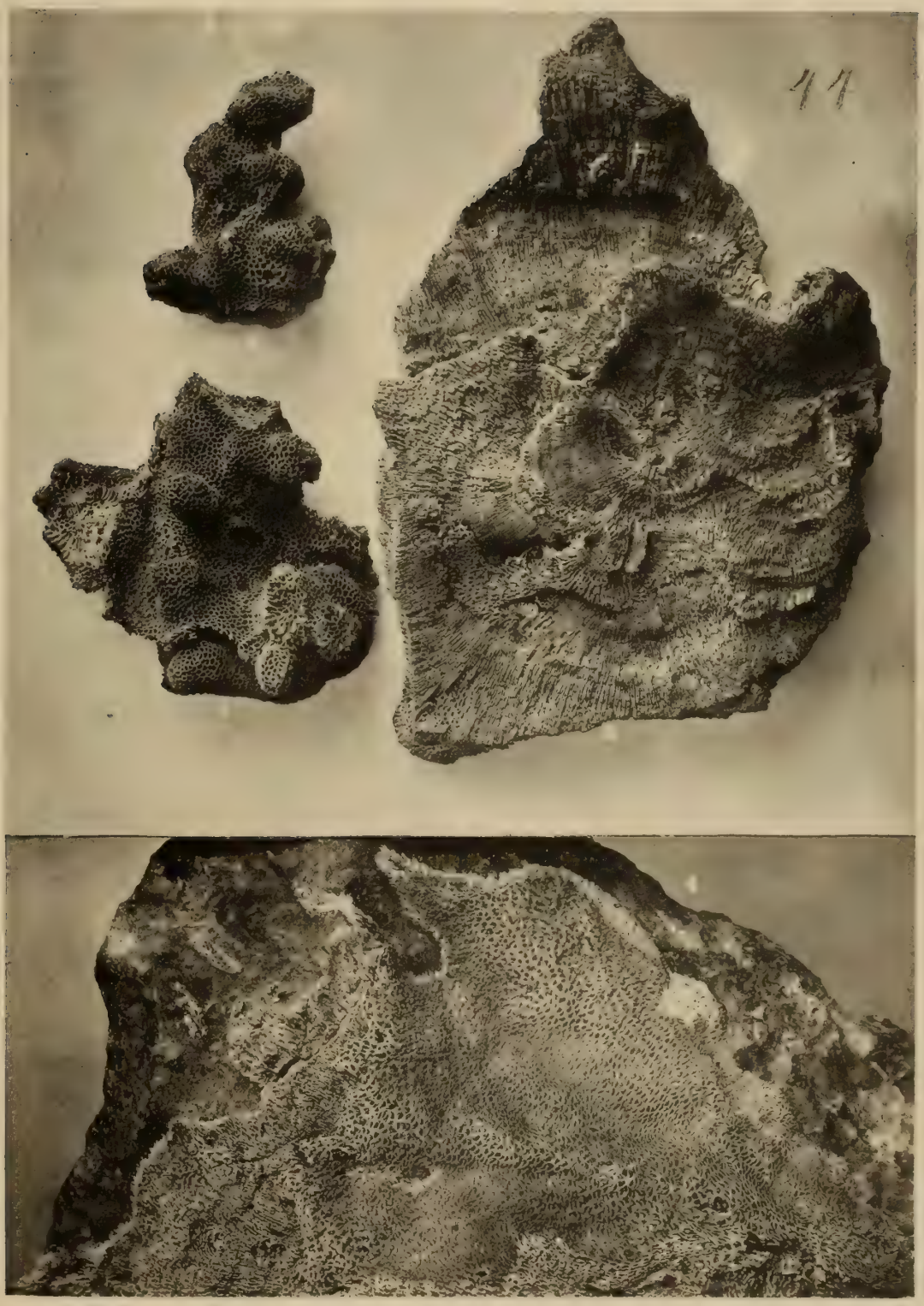


PLATE 62.

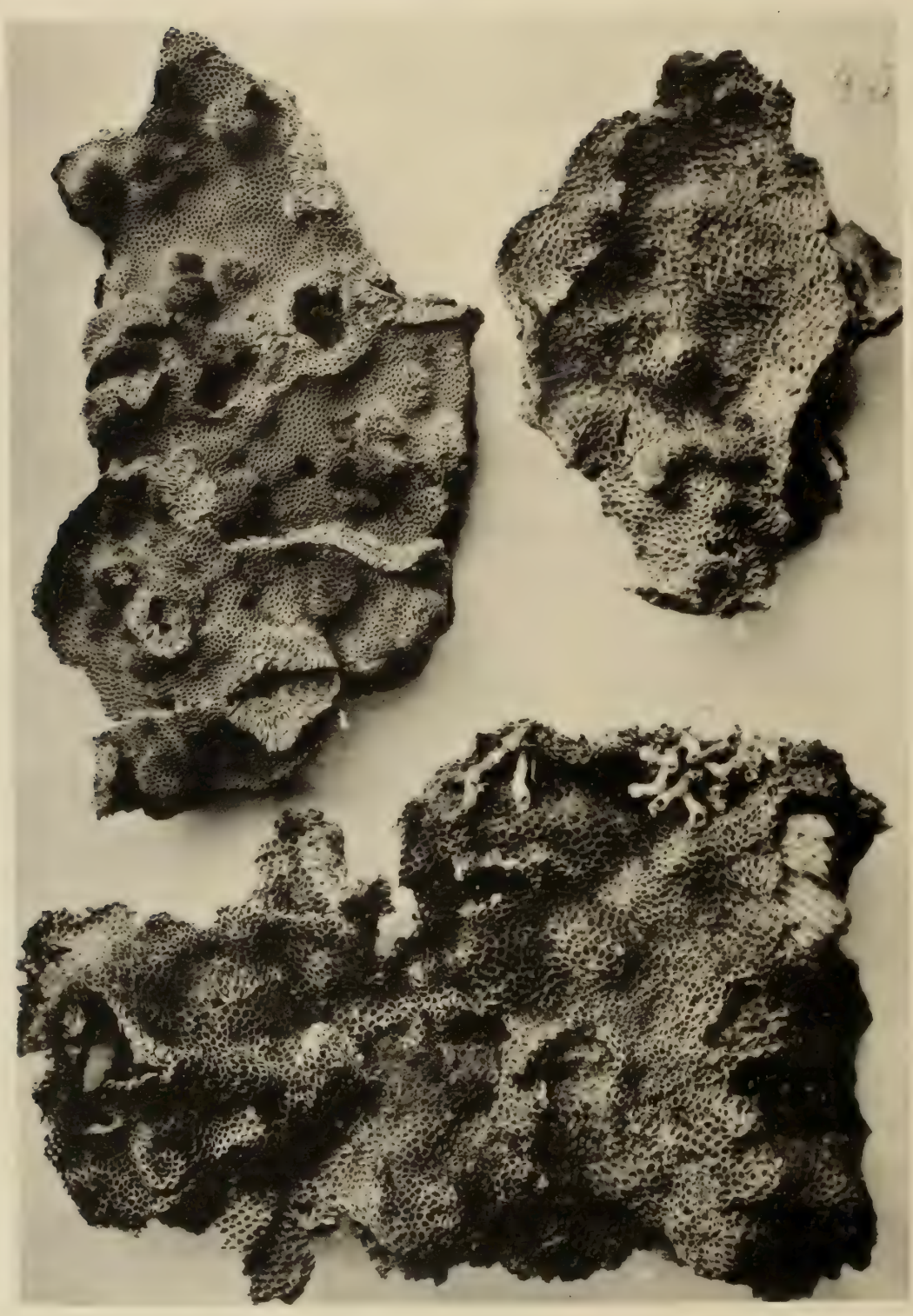


PLATE 62.

CLADOPORA DISPANSA, Nov. Spec. *Devonian.*

1. Upper surface of a sub-cymous corallum from the Lower Devonian, Falls of the Ohio. Collection of the author.

CLADOPORA CRASSA, Nov. Spec. *Devonian.*

2. Upper surface of a fragment of typical growth.
3. Upper surface of a specimen with corallets less erect than those of the preceding example.

Both specimens from the Lower Devonian strata, Falls of the Ohio. Collection of the author.

PLATE 63.

CLADOPORA DENTATA, Nov. Spec. *Devonian.*

1. Front lateral view of a corallum from the Lower Devonian, Falls of the Ohio.
2. Fragment of a frond from the ferruginous clay of the Lower Devonian, near Louisville.
3. Portion of a pedicle obtained *in situ* two feet above the horizon of example 1, Falls of the Ohio.

CLADOPORA RICTA, Nov. Spec. *Devonian.*

4. Rear view of a fragment showing fronds laterally joined by approximation.
5. Front lateral view of the base of an example.

   Both specimens gathered from the Lower Devonian rocks, Falls of the Ohio.

PLATYAXUM (Nov. Gen.) FOLIATUM, Nov. Spec. *Devonian.*

6. Front lateral view of the lower half of a corallum from the Lower Devonian, Falls of the Ohio.

DENDROPORA ORNATA. *Devonian.*

7. Side view of a corallum from the dark-red clay derived from the decomposition of the encrinal limestone of the Upper Devonian, near Louisville.

DENDROPORA PROBOSCIDALIS. *Devonian.*

8. (Artificially attached, for convenient photographic delineation, to the side of the Cyathophyllum imbedded in the rock matrix of C. Dentata, Fig. 1.) Frond from the Lower Devonian, Falls of the Ohio.

The specimens figured in this plate belong to the collection of the author.

PLATE 63.

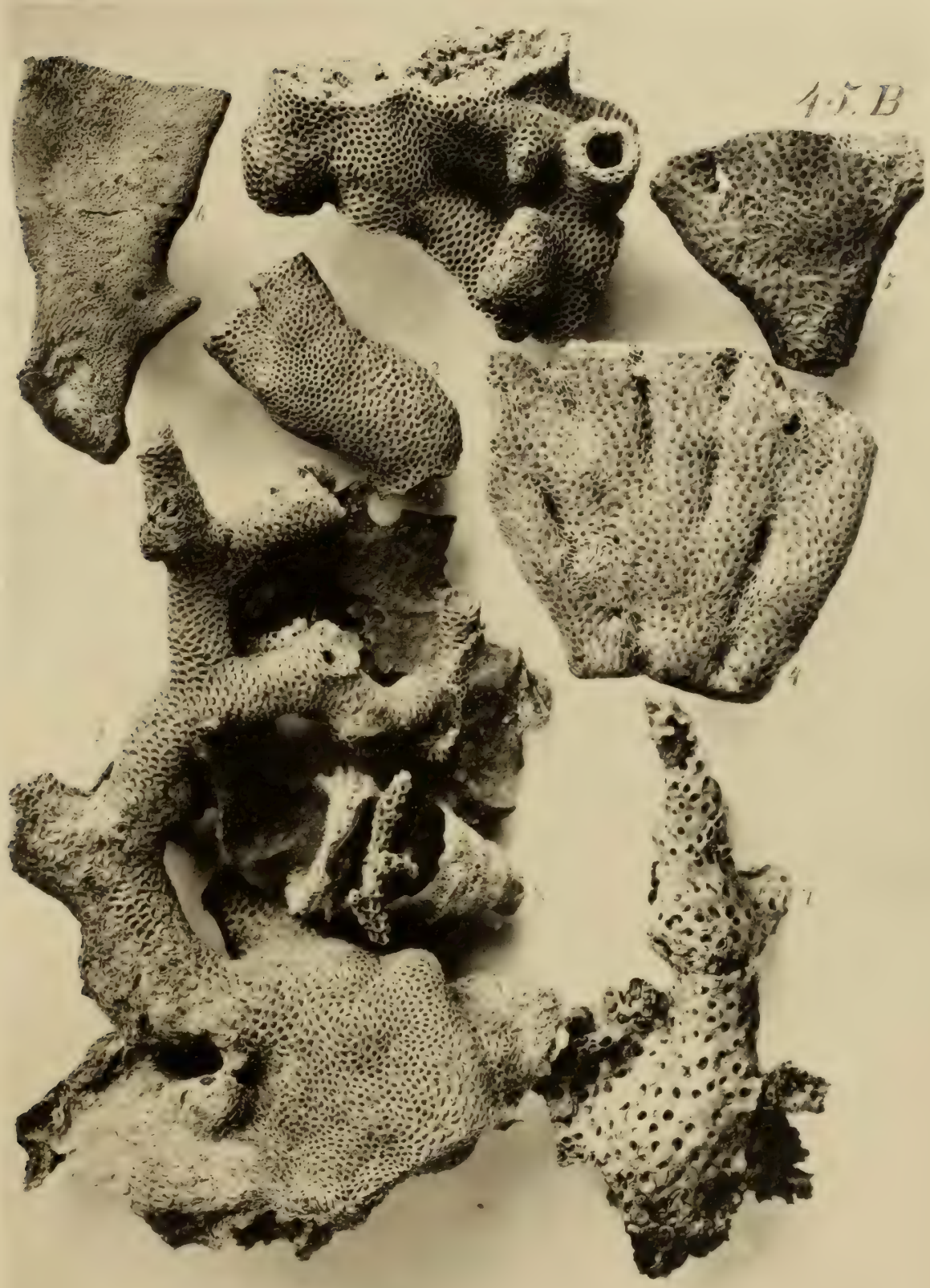


PLATE 64.

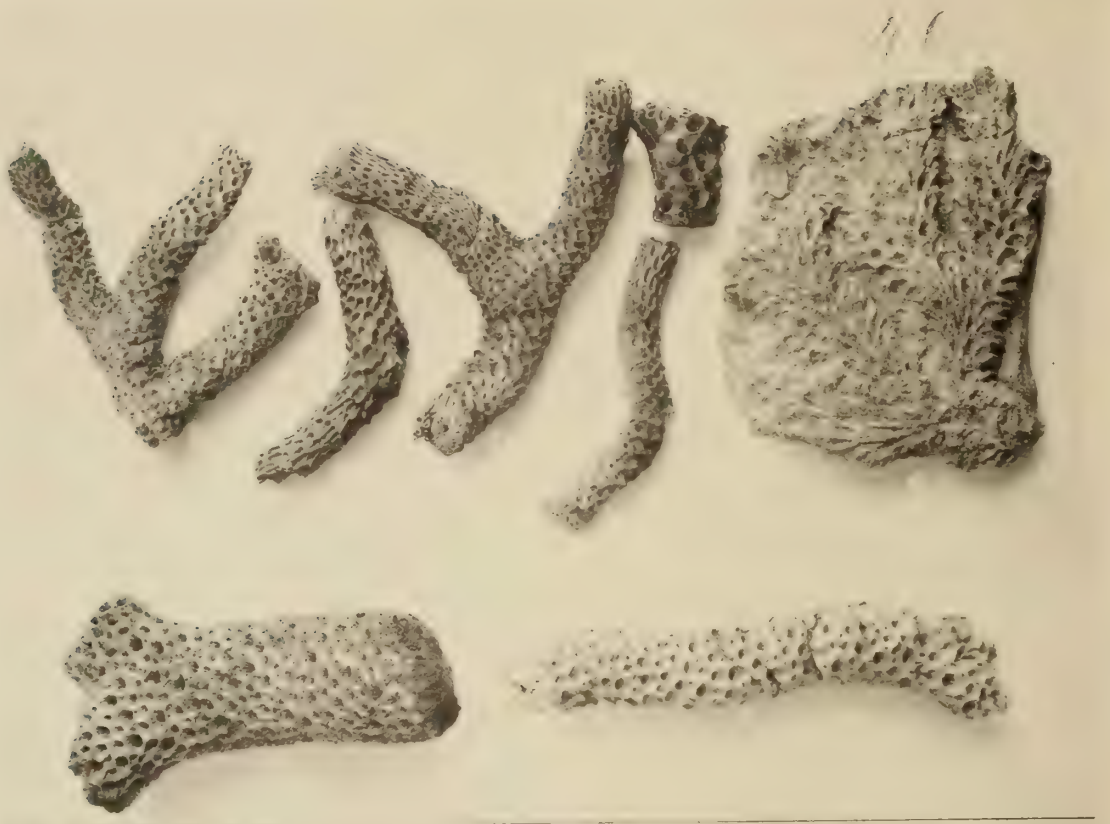


PLATE 64.

CLADOPORA IOWENSIS. *Devonian.*

1. 2. 3. 4. Fragments from the Lower Devonian, Falls of the Ohio. In Fig. 3 the specimen is inverted. Collection of the author.

STRIATOPORA HURONENSIS. *Niagara.*

5. Fragment from the Upper Niagara red clay, near Louisville. Collection of the author.

6. Front side view of an eroded specimen, showing mural pores and faint longitudinal striæ, from the white clay of the Upper Niagara. Collection of Mr. McConathy.

STRIATOPORA LINNÆANA. *Devonian.*

7. Fragment (prostrate) from the Lower Devonian rocks two feet above the Niagara and Devonian passage-beds, near Louisville. Collection of the author.

8. Fragment (prostrate) from the ferruginous clay of the Lower Devonian, near Louisville. Occurring in a horizon eight feet above that of example 7. Collection of the author.

STRIATOPORA ALBA, Nov. Spec. *Devonian.*

9. 10. 11. Portions of fronds from the red clay beds of the Middle Devonian, near Louisville. Collection of the author.

CLADOPORA GRACILIS, Nov. Spec. *Devonian.*

12. 13. Fronds from the rotten chert of the Middle Devonian, Falls of the Ohio. Example 12 is artificially attached to the matrix of example 13. The latter fails to photograph satisfactorily because of its color. Collection of the author.

PLATE 65.

DENDROPORA ELEGANTULA. *Devonian.*

1. Portion of a frond partly imbedded in its rock matrix, from the Lower Devonian, Falls of the Ohio.

DENDROPORA ALTERNANS. *Devonian.*

2. Fragment from the red clay of the encrinal limestone of the Upper Devonian, near Louisville.

DENDROPORA NEGLECTA. *Devonian.*

3. 4. 5. Fragments from the horizon and vicinage of D. alternans.

DENDROPORA ORNATA. *Devonian.*

6. Fragment from the red clay of the Middle Devonian, near Louisville.

DENDROPORA OSCULATA, Nov. Spec. *Devonian.*

7. 8. 9. Fragments from the horizon and vicinage of D. alternans.

10. Two fronds inosculating or joining by approximation; from the same place.

11. Portion of a basal expansion with parts of fronds intimately united; from the horizon and neighborhood of the preceding specimens of the species.

The examples herein figured belong to the collection of the author.

PLATE 65.

PLATE 66.

PLATE 66.

DENDROPORA OSCULATA, Nov. Spec. *Devonian.*

Front lateral view of a portion of a corallum of great size, showing the base and the fronds disjunct and again anastomosing; from the upper strata of the Middle Devonian rocks, Falls of the Ohio. Collection of the author.

PLATE 67.

HALYSITES CATENULATUS. *Niagara.*

1. Upper surface of a portion of a corallum, in which the corallets are of average size; from the white clay of the Upper Niagara, near Louisville. Collection of the author.
2. Upper surface of a fragment whose corallets are below the medium size; from the ferruginous clay of the Upper Niagara, near Louisville. Collection of the author.
3. Upper surface of a jejune corallum, from the horizon and neighborhood of example 2.

HALYSITES NEXUS, Nov. Spec. *Niagara.*

4. Oblique lateral view of a corallum from the Upper Niagara white clay, two feet below the Niagara and Devonian passage-beds, near Louisville. Collection of Mr. McConathy.
5. Upper surface of a divaricating chain, imbedded in its chert matrix; from the ferruginous clay of the Upper Niagara, just below the passage-beds above referred to, near Louisville. Collection of the author.

PLATE 67.

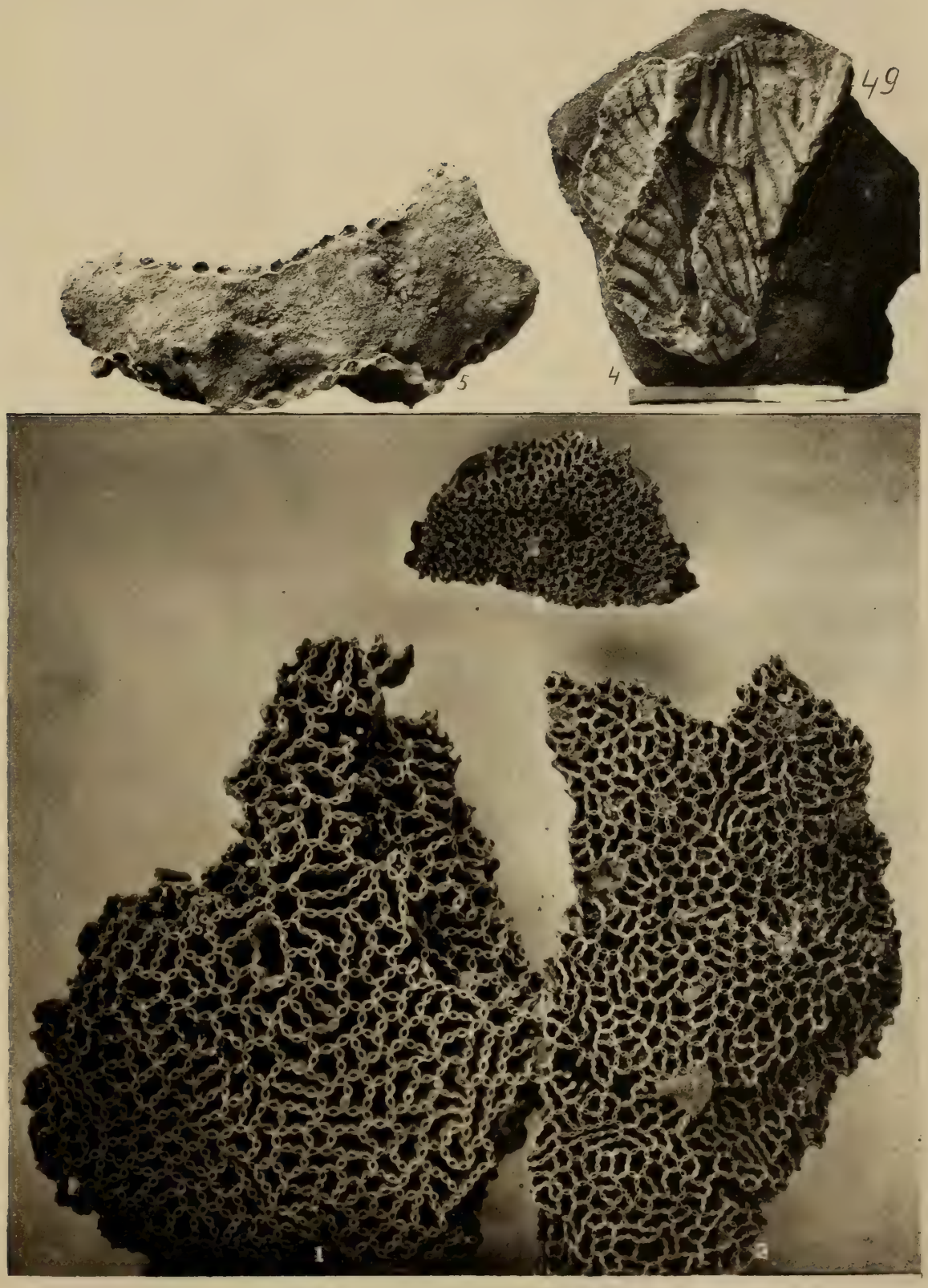


PLATE 68.

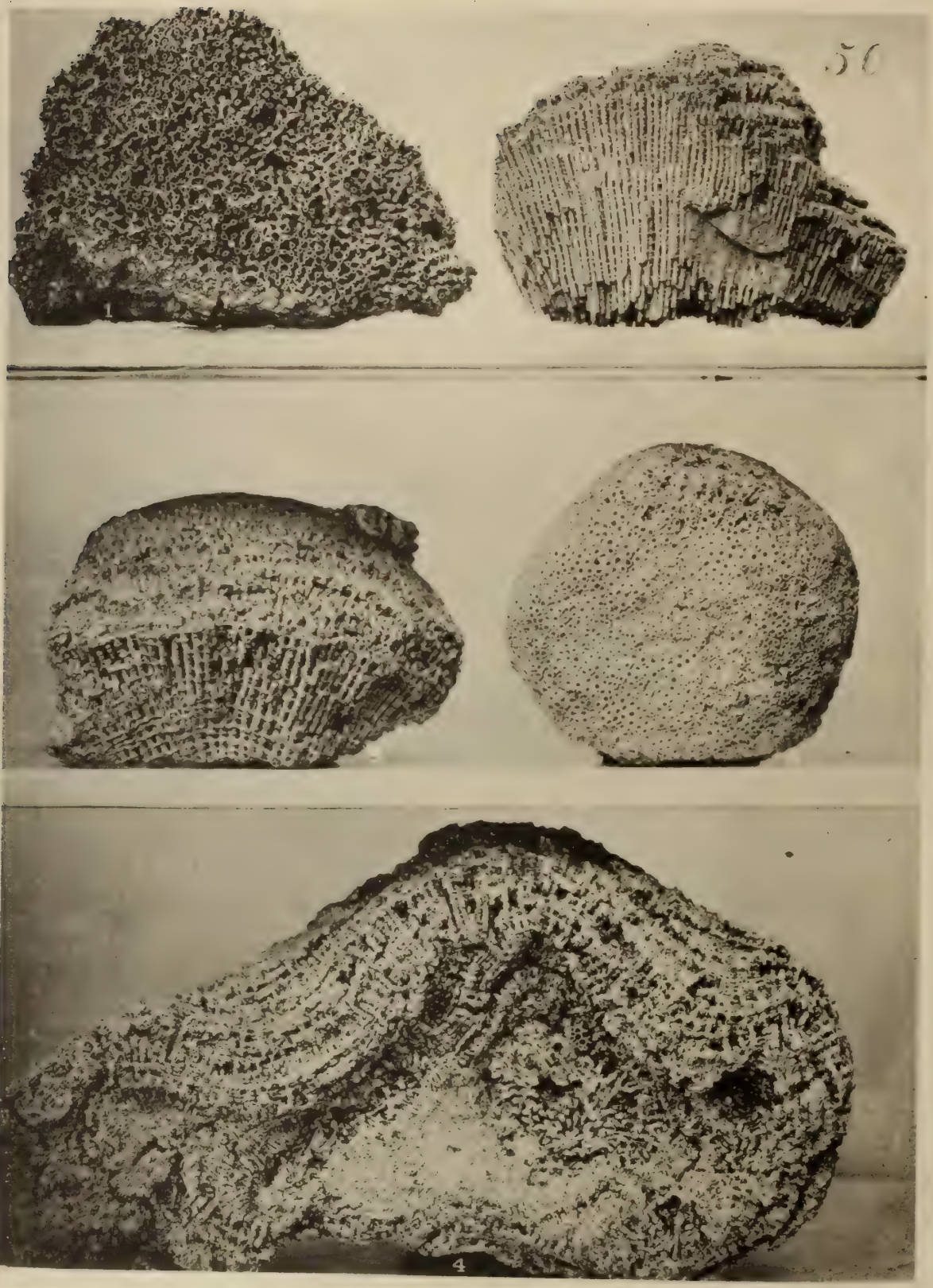


PLATE 68.

SYRINGOPORA HISINGERI. *Devonian.*

1. Upper surface of a fragment from the ferruginous clay of the Lower Devonian, near Louisville.

SYRINGOPORA STRAMINEA, Nov. Spec. *Devonian.*

2. (Upper right specimen.) Lateral view of a fragment whose horizon is about one foot lower than the lowest stratum in which S. hisingeri is found; from the ferruginous clay of the Lower Devonian, near Louisville.

SYRINGOPORA TABULATA. *Devonian.*

3. Lateral view and also an oblique view of the upper surface of a fragment from the red clay of the Middle Devonian, near Louisville.

SYRINGOPORA BOUCHARDI. *Devonian.*

4. Under surface of a corallum whose appressed corallets indicate the form of the marine object to which the incipient community was attached; from the Middle Devonian red clay, near Louisville.

5. Upper surface of a corallum incrusting Cyathophyllum corniculum, from the upper rock strata of the Middle Devonian, Falls of the Ohio.

The specimens figured in this plate belong to the collection of the author.

PLATE 69.

SYRINGOPORA TUBIPOROIDES. *Devonian.*

1. Oblique view of the Upper surface of a corallum from the ferruginous clay of the Lower Devonian, near Louisville. Collection of the author.
2. Upper surface of a corallum from the Lower Devonian rocks, Falls of the Ohio. Collection of Mr. Gaines.
3. Basal expansion incrusting Favosites emmonsi, from the Lower Devonian red clay, near Louisville. Collection of Mr. McConathy.

SYRINGOPORA PERELEGANS. *Devonian.*

4. Oblique section of a corallum from the upper strata of the Lower Devonian group of rocks, Falls of the Ohio. Collection of the author.
5. Variety (inverted) from the same locality as example 4, but whose horizon is a little higher, showing more widely separated corallets, and more remote processes of connection. Collection of the author.

PLATE 69.

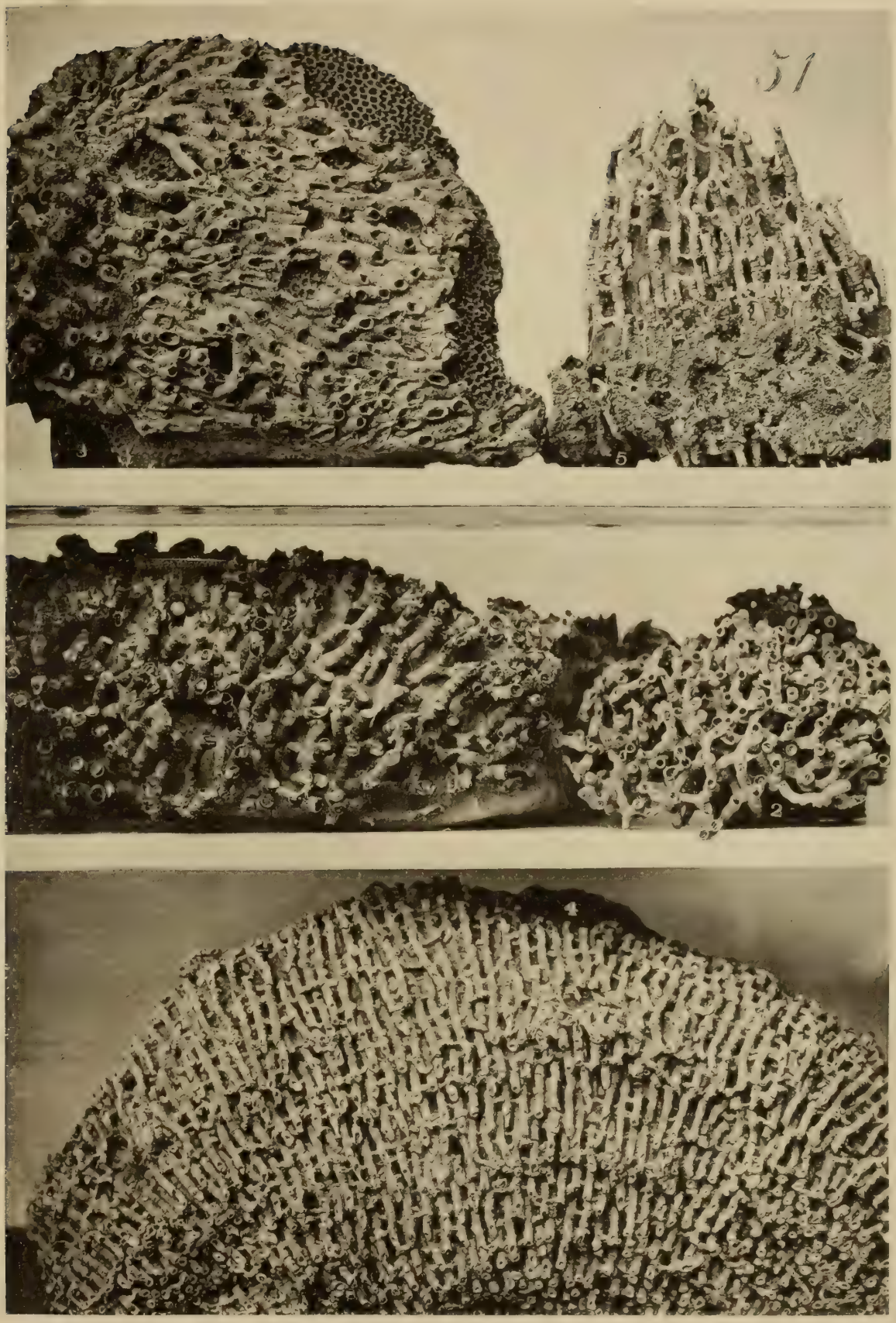


PLATE 70.

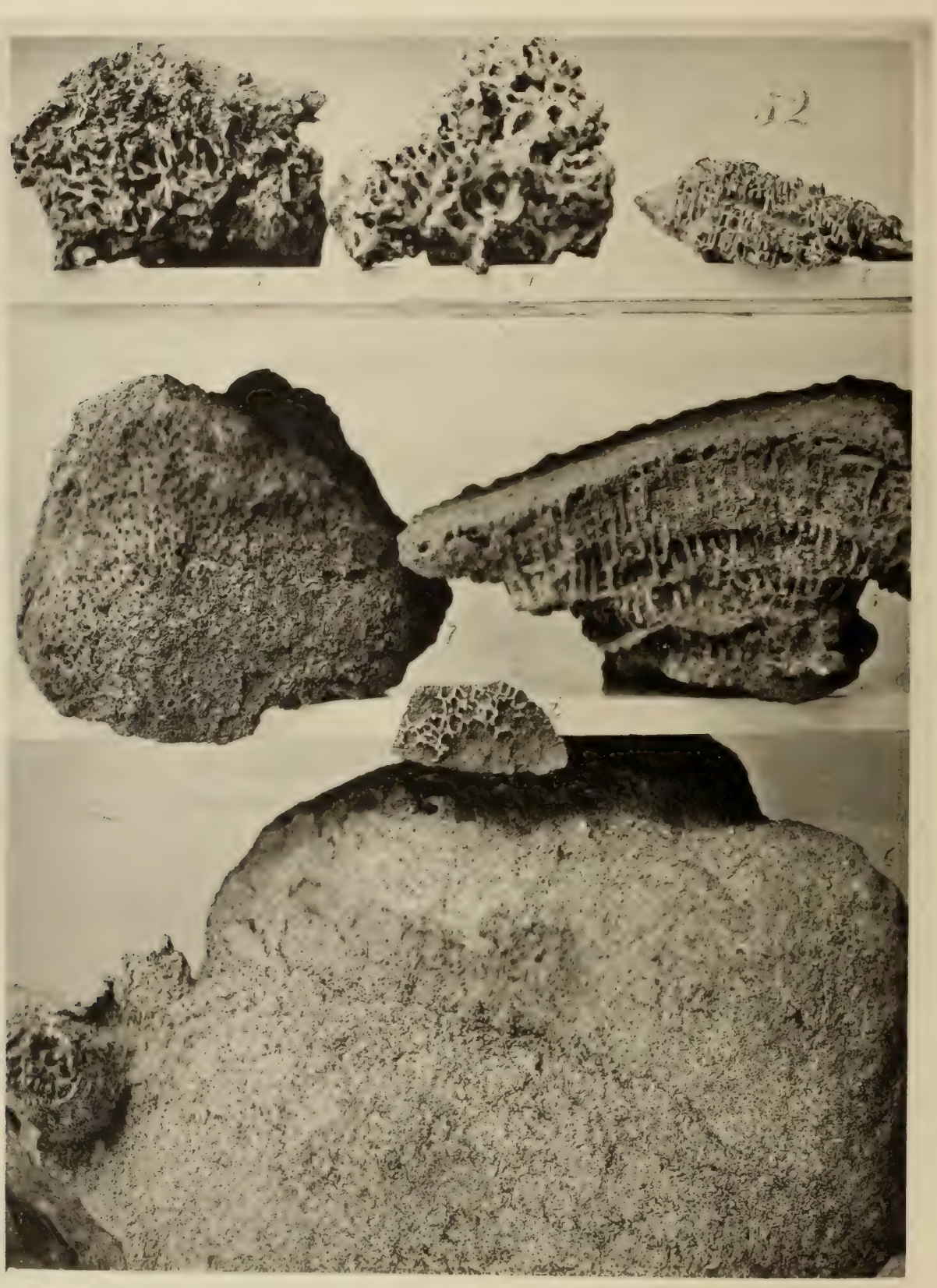


PLATE 70.

DRYMOPORA (Nov. Gen.) FASCICULARIS. *Niagara and Devonian.*

1. Lateral view (inverted) of a fragment from the Upper Niagara white clay, near Louisville.
2. Base of a corallum attached to Stromatopora concentrica; from the Upper Niagara red clay, near Louisville.
3. Portion of a corallum invested by Stromatopora, from the ferruginous clay of the Lower Devonian, near Louisville.
4. Portion of a corallum similarly inclosed, from the manganese limestone of the Lower Devonian, Falls of the Ohio.

DRYMOPORA COMMENSALIS, Nov. Spec. *Devonian.*

5. Vertical section of a corallum growing in commensality with Stromatopora texilis, as it is the habit of the species to do with some form of Stromatopora; most of the corallets appear larger than their proper size because of their investiture; from the manganese limestone of the Lower Devonian, Falls of the Ohio.
6. 7. Upper surfaces of coralla, the orifices of the corallets showing at the surfaces of the sarcodemes; from the ferruginous clay of the Lower Devonian, near Louisville.

All from the collection of the author.

PLATE 71.

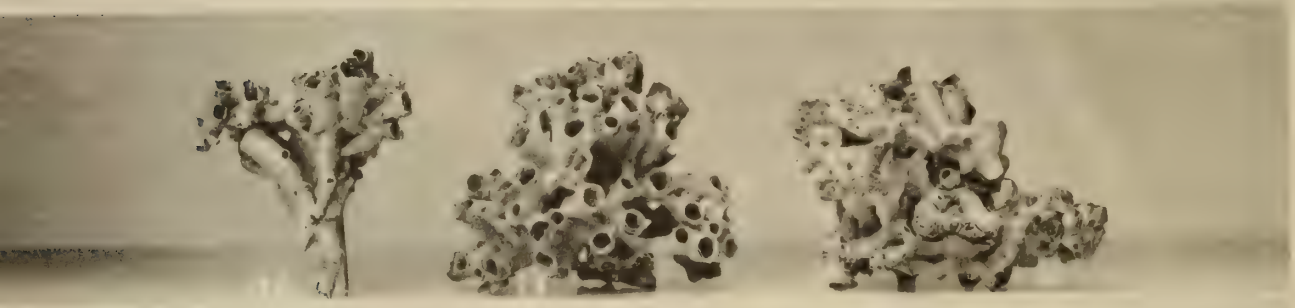
DRYMOPORA NOBILIS. *Devonian.*

1. Lateral view of a corallum from the Lower Devonian rocks, Falls of the Ohio.
2. Upper surface of a corallum, from the same horizon and place.
3. Upper surface of a corallum of procumbent habit; from the same place.
4. Basal corallets of a young community, attached to Cyathophyllum halli; from the ferruginous clay of the Lower Devonian, near Louisville.

Examples from the collection of the author.

PLATE 71.

PLATE 72.



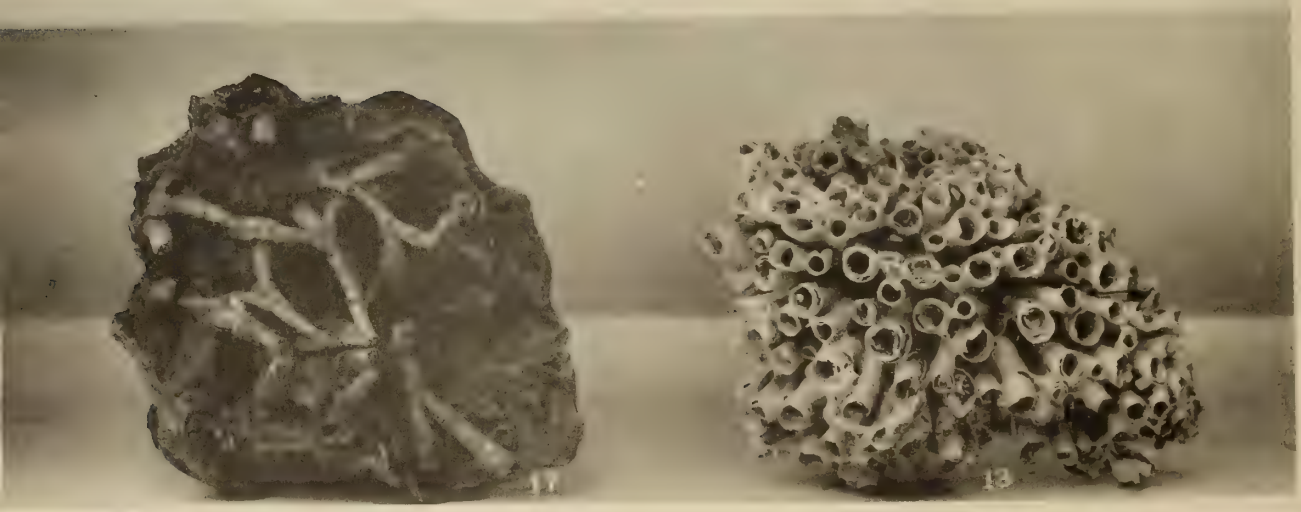


PLATE 72.

DRYMOPORA AULOPOROIDEA, Nov. Spec. *Devonian.*

1. 2. 3. 4. Front lateral views of corallets of prolific habit.
5. Lateral views of two inosculating coralla.
6. 10. 11. Coralla of biserial growth.
7. 8. Examples of quadriserial growth.
9. A triserial form.
12. Basal corallets of a jejune community, attached to the upper surface of a Chetetes.

Examples 1–11 are found in the encrinal limestone dark red clay of the Upper Devonian, near Louisville. Specimen 12 was gathered from the rotten chert of the Middle Devonian, Falls of the Ohio.

DRYMOPORA FRUTECTOSA, Nov. Spec. *Devonian.*

13. Upper surface of a corallum composed of large corallets.
14. Upper surface of a corallum whose corallets are of medium size.
15. Under surface of a corallum.
16. Front lateral view of a corallum.

All from the horizon and vicinage of D. auloporoidea, Figs. 1–11.

DRYMOPORA INTERMEDIA. *Devonian.*

17. Rear lateral view of corallets invested by Stromatopora granulata, from the Lower Devonian ferruginous clay, near Louisville.

Specimen 1 belongs to the collection of Mr. Gaines. The other specimens herein figured are from the collection of the author.

PLATE 73.

AULOPORA EDITHANA. *Devonian.*

1. Corallum incrusting the dorsal valve of Strophomena hemispherica, from the rotten hornstone of the Middle Devonian, Falls of the Ohio. Collection of the author.

ROMINGERIA INCRUSTANS, Nov. Spec. *Devonian.*

2. Corallum, somewhat eroded, incrusting Cyathophyllum pocillum.
3. Under surface and lateral view of a corallum.
4. Upper surface of a corallum.

From the Middle Devonian, Falls of the Ohio. Collection of the author.

AULOPORA PYGMŒA, Nov. Spec. *Niagara.*

5. Corallum incrusting Thecia swindernana, from the Upper Niagara white clay, near Louisville.
6. Example incrusting Stromatopora concentrica, from the Upper Niagara red clay, near Louisville.

Collection of the author.

AULOPORA CORNUTA. *Devonian.*

7. Corallum incrusting interior and margin of calyx of Cyathophyllum corniculum, from the Middle Devonian, Falls of the Ohio. Collection of the author.
8. Corallum incrusting fragment of Cyathophyllum scyphus, from the Upper Devonian dark red encrinal limestone clay, near Louisville. Collection of Mr. Gaines.

AULOPORA CULMULA, Nov. Spec. *Devonian.*

9. Corallum incrusting a jejune frond of Favosites clausus, from the Lower Devonian, Falls of the Ohio. Collection of the author.

NICHOLSONIA (Nov. Gen.) CANADENSIS. *Devonian.*

10. 11. Corallets incrusting a Fenestella, from the rotten chert of the Middle Devonian, Falls of the Ohio. Collection of the author.

[The corals and bryozoa both being white, the photographic delineation of the former is unsatisfactory, although the examples are good.]

AULOPORA PROCUMBENS, Nov. Spec. *Devonian.*

12. Corallets incrusting a species of Stromatopora, from the Lower Devonian ferruginous clay, near Louisville. Collection of the author.
13. Corallets similarly incrusting Stromatopora, from the horizon and place of example 12. Collection of Mr. McConathy.

PLATE 73.

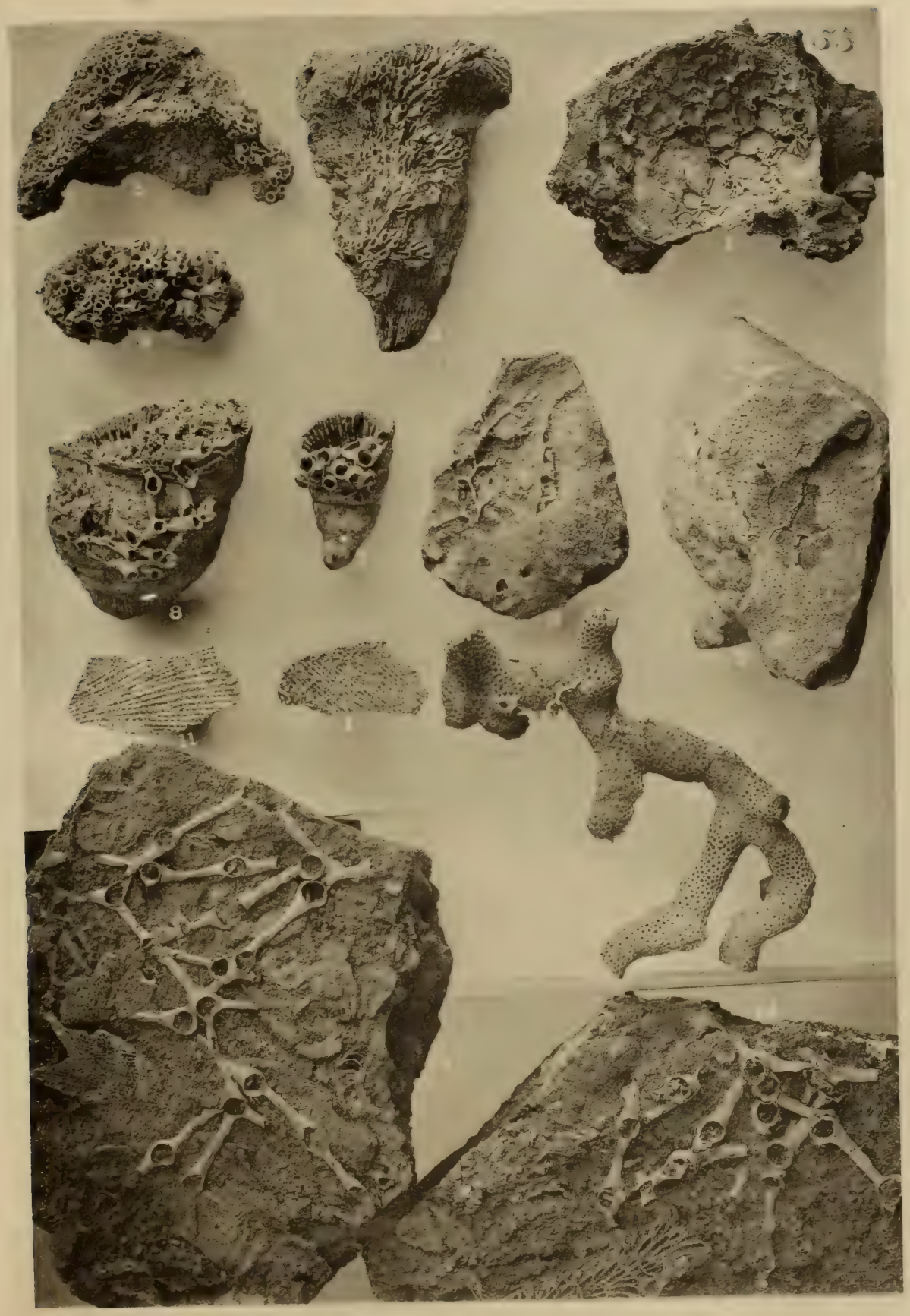


PLATE 74.

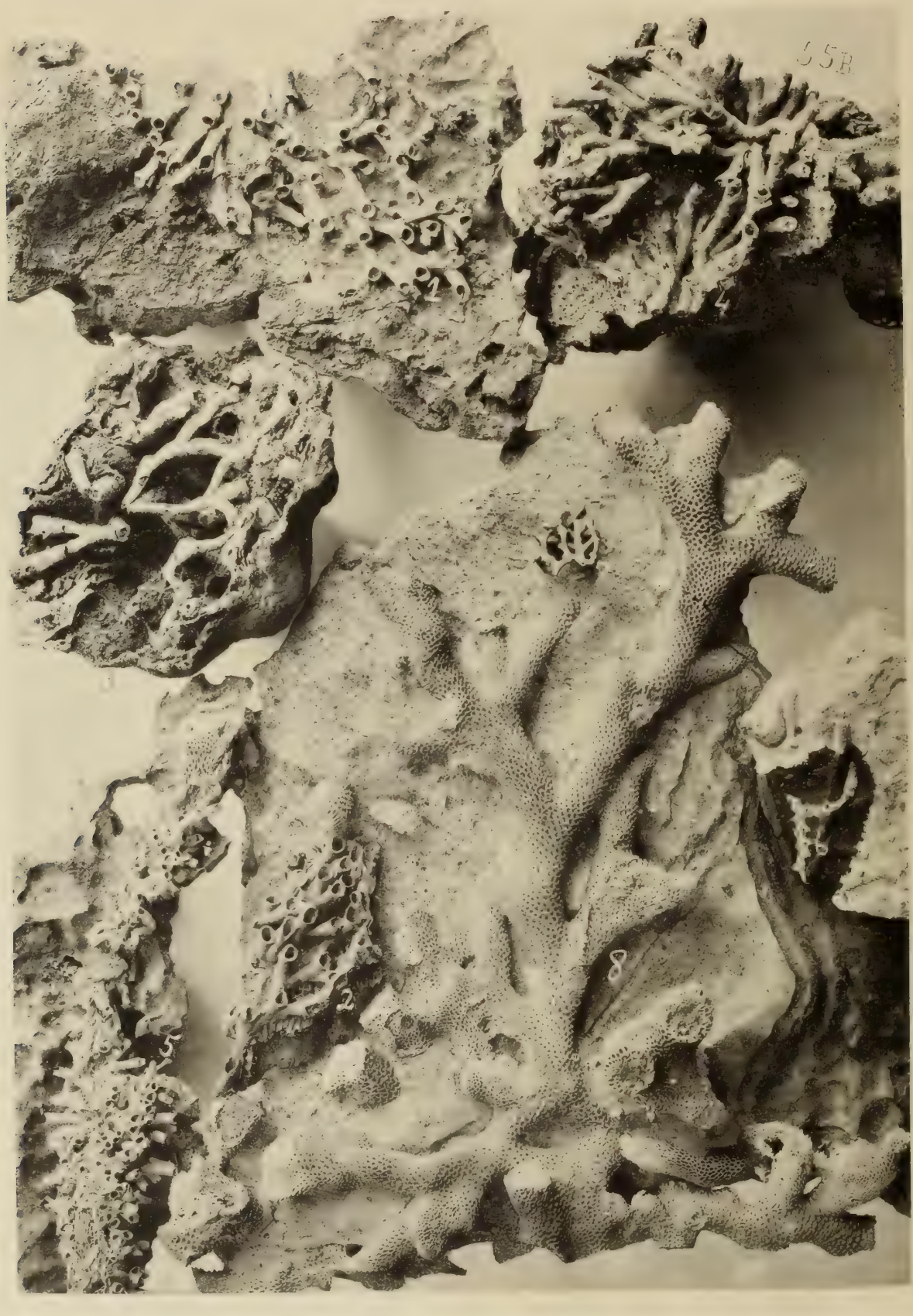


PLATE 74.

AULOPORA SERPENS. *Devonian.*

1. (Upper left-hand specimen.) Corallets incrusting under surface of Stromatopora texilis, from the Lower Devonian rocks, Falls of the Ohio.
2. Corallets incrusting a fragment of Favosites, from the Lower Devonian red clay, near Louisville.

DRYMOPORA INTERMEDIA. *Devonian.*

3. View of the corallum figured in Plate 72.
4. Basal corallets attached to a fragment of Favosites canadensis, from the Lower Devonian rocks, Falls of the Ohio.

ROMINGERIA INCRUSTANS, Nov. Spec. *Devonian.*

5. Corallets incrusting a frond of Cladopora cryptodens, from the Lower Devonian, Falls of the Ohio.

DIORYCHOPORA (Nov. Gen.) TENUIS, Nov. Spec. *Niagara.*

6. Corallum (inverted) from the Upper Niagara white clay, near Louisville.

DRYMOPORA FASCICULARIS. *Devonian.*

7. Fragment from the Lower Devonian, Falls of the Ohio. Collected by Dr. Theiss.

CLADOPORA FRANCISCI. *Devonian.*

8. Upper fronds of a corallum from the Lower Devonian, Falls of the Ohio.

The specimens herein figured are from the collection of the author.

PLATE 75.

ROMINGERIA VANNULA, Nov. Spec. *Niagara.*

1. Upper surface of corallets from the Upper Niagara white clay, near Louisville. Collection of Mr. Nettelroth.
2. Similar view of corallets from the same horizon and locality. Collection of Mr. Gaines.
5. Similar view of corallets attached to a Favosites, from a lower horizon of the same group, near Louisville. Collection of the author.
3. Under surface of two inosculated cymes, from the Upper Niagara red clay, near Louisville. Collection of the author.

ROMINGERIA UVA, Nov. Spec. *Niagara and Devonian.*

6. Basal corallets incrusting a Fenestella frond, from the rotten chert of the Middle Devonian, Falls of the Ohio. Collection of the author.
7. Corallum from the Upper Niagara white clay stratum three feet below the passage-beds, near Louisville. Collection of the author.

ROMINGERIA UMBELLIFERA. *Devonian.*

4. Upper surface of two cymes, from the Lower Devonian, Falls of the Ohio. Collection of the author.
8. Fragment showing verticillate sprouts, from the Lower Devonian red clay. Collection of Mr. Nettelroth.
9. Similar fragment from the Lower Devonian rocks, Falls of the Ohio. Collection of the author.
10. 11. 12. Fragments from the horizon and place of example 9. Collection of the author.
13. Jejune corallets from the same place. Collection of the author.

ROMINGERIA FASCICULATA, Nov. Spec. *Devonian.*

14. 15. 16. Lateral views of corallets from the decomposing chert of the Middle Devonian, Falls of the Ohio.
18. Upper surface of corallets from the same place.
Collection of the author.

ROMINGERIA INCRUSTANS, Nov. Spec. *Devonian.*

17. Corallets incrusting Cladopora imbricata, from the Lower Devonian rocks, Falls of the Ohio. Collection of the author.

PLATE 75.

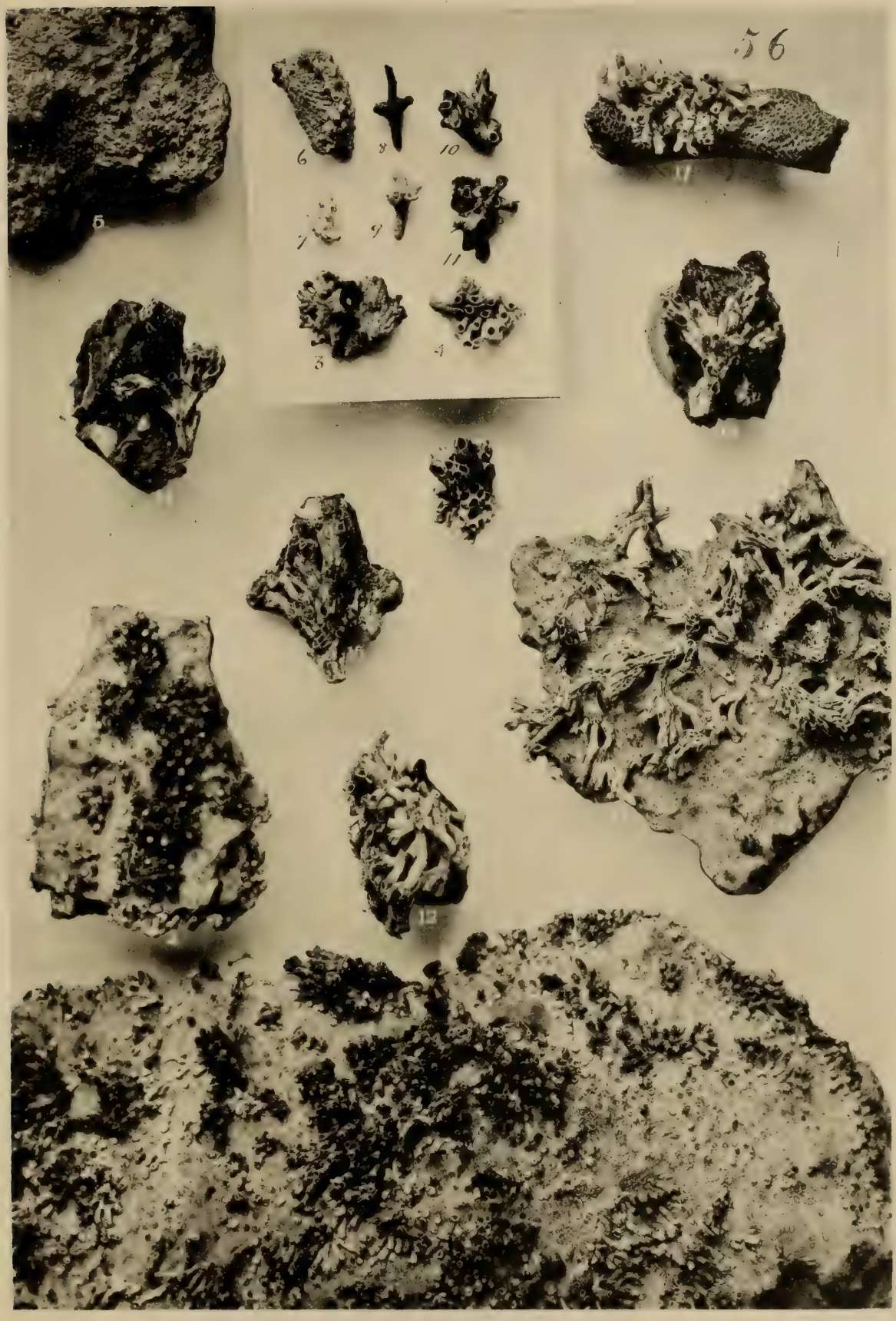


PLATE 76.

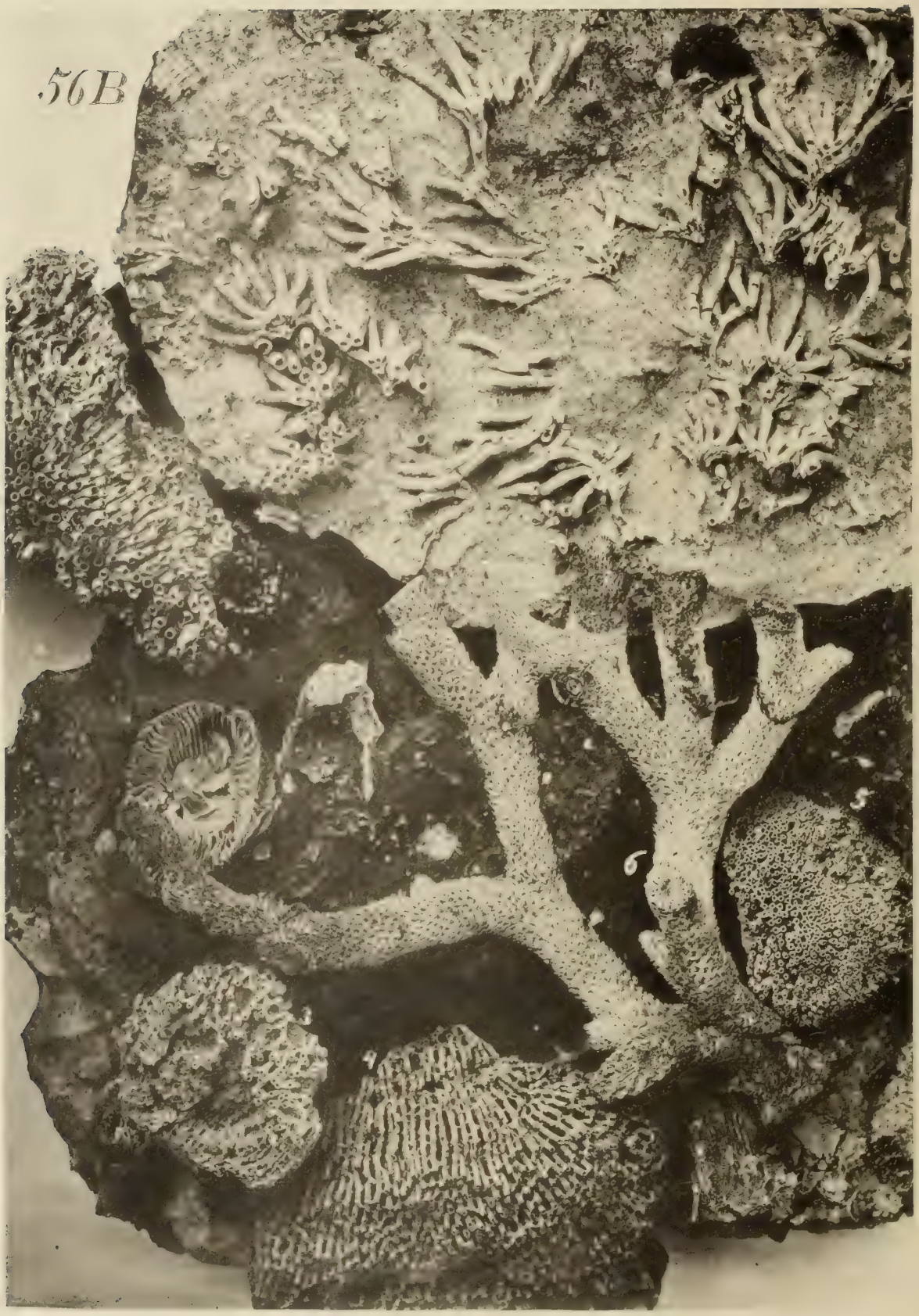


PLATE 76.

ROMINGERIA UMBELLIFERA. *Devonian.*

1. Rear lateral view of verticillate umbels, showing spinulous inner-walls, from the Lower Devonian, Falls of the Ohio. Collection of the author.

ROMINGERIA INCRUSTANS, Nov. Spec. *Devonian.*

2. Corallum incrusting Zaphrentis gregaria, from the Middle Devonian, Falls of the Ohio. Collection of Mr. Gaines.

AULOPORA EDITHANA. *Devonian.*

3. Corallum attached to Favosites hemisphericus, from the Middle Devonian, Falls of the Ohio. Collection of the author.

SYRINGOPORA HISINGERI. *Devonian.*

4. Lateral view (inverted) of example figured in Plate 68, Fig. 1.

SYRINGOPORA STRAMINEA, Nov. Spec. *Devonian.*

5. Upper surface of corallum, from the Lower Devonian rocks, Falls of the Ohio. Collection of the author.

CLADOPORA DESQUAMATA, Nov. Spec. *Devonian.*

6. Corallum partly imbedded in matrix, from the Lower Devonian rocks, Falls of the Ohio. Collection of the author.

PLATE 77.

CYATHOPHYLLUM HALLI. *Devonian.*

1. Left lateral view of corallum, from the blue clay of the Middle Devonian, Falls of the Ohio.
2. Right lateral view of corallum, from which the epitheca is worn; from the Lower Devonian ferruginous clay, near Louisville.

Collection of the author.

PLATE 77.

PLATE 78.

PLATE 78.

ANTHOLITES (Nov. Gen.) SPECIOSUS, Nov. Spec. *Devonian.*

1. View of the upper surface of a corallum, from the dark-red clay derived from the encrinal limestone of the Upper Devonian, near Louisville.
2. Sectional view of the same specimen, showing avitous corallets attached to a crinoid column.

CYATHOPHYLLUM PUSTULOSUM, Nov. Spec. *Devonian.*

3. Oblique front and right lateral view of a corallum of typical shape and size.
4. Calyx of a corallum.

   Found in the vicinage of the antholite, but in a horizon about a foot lower.

CYATHOPHYLLUM INSIGNE, Nov. Spec. *Devonian.*

5. View of the calyx of a corallum, found associated with the former species.

CHONOPHYLLUM MULTIPLICATUM, Nov. Spec. *Devonian.*

6. View of the calyx of a corallum, from the Lower Devonian limestones, Falls of the Ohio.

CYATHOPHYLLUM EXIGUUM. *Devonian.*

7. View of the calyx of a huge corallum, from the Lower Devonian clay, near Louisville.

CYATHOPHYLLUM GREENI, Nov. Spec. *Devonian.*

8. Rear lateral view of an adult corallum.
9. Left lateral view of a weathered example.
10. A jejune specimen.

    Cut from the Lower Devonian rocks, Falls of the Ohio.

CYATHOPHYLLUM FLOS, Nov. Spec. *Niagara and Devonian.*

11. View of the calyx of a proliferous corallum, from the stratum of white clay seven feet below the Niagara and Devonian passage-beds, near Louisville.
12. Central view of a corallum of average size, from the same horizon and place.
13. View of the calyx of a small corallum, from the Lower Devonian clay, near Louisville.
14. View of the calyx of a large corallum, from the red clay of the Middle Devonian, near Louisville.

ZAPHRENTIS GREENANA, Nov. Spec. *Devonian.*

15. Right lateral view of a medium-sized corallum.
16. View of the calyx of a corallum.

From the Middle Devonian clay, near Louisville.

ZAPHRENTIS ROMINGERI, Nov. Spec. *Devonian.*

17. View of the calyx of a corallum, from the red clay of the Middle Devonian, near Louisville.

NICHOLSONIA (Nov. Gen.) CANADENSIS. *Devonian.*

18. Corallets of continuous growth attached to a zaphrentis, from the blue clay of the Middle Devonian, near Louisville.

NICHOLSONIA ADNATA, Nov. Spec. *Devonian.*

19. Corallets incrusting a zaphrentis and overrunning a portion of the less robust N. canadensis.

The specimens figured in this plate belong to the collection of the author.

PLATE 79.

PLATE 79.

CYATHOPHYLLUM CORNICULUM. *Devonian.*

1. Left lateral view of corallum of uncommon altitude, from the Middle Devonian red clay, near Louisville.
2. 4. Left lateral views.
3. 5. Right lateral views.
6. Central view.
7. View of calyx.
8. View of gemmiferous calyx.

The several coralla are from the Middle Devonian, Falls of the Ohio.

CYATHOPHYLLUM JUVENE. *Devonian.*

9. Central view.
10. 11. Right lateral views.
12. View of calyx.

The several coralla are from the dark-red encrinal limestone clay of the Upper Devonian, near Louisville.

CYATHOPHYLLUM BREVICORNE, Nov. Spec. *Devonian.*

13. Apertural view.
14. Central view.
15. 16. Left lateral views.
17. 18. Views of calyces.

The coralla are from the Middle Devonian, Falls of the Ohio.

Examples herein figured are from the collection of the author.

PLATE 80.

CYATHOPHYLLUM TORNATUM, Nov. Spec. *Devonian.*

1. Exterior apertural view of a corallum from the superior stratum of the encrinal limestone dark-red clay, near Louisville.

CYATHOPHYLLUM JUVENE. *Devonian.*

2. Right lateral view of a young corallum.
6. View of the gemmiferous calyx of a corallum.
7. Apertural view of a corallum of more than average altitude.
8. Explanate calyx of a corallum of medium size.

From the horizon and vicinage of examples figured in Plate 79.

CYATHOPHYLLUM ETHELANUM, Nov. Spec. *Devonian.*

3. Lateral and apertural-gap view of corallum of slender, tortuous growth.
5. Oblique anterior view of a corallum of medium size.

Found from three to four feet below the shale which caps the Upper Devonian, near Louisville.

CYATHOPHYLLUM TRAUTHANUM, Nov. Spec. *Devonian.*

4. Right lateral view of a corallum of average size.

Associated with C. ethelanum.

CYSTIPHYLLUM CUYAGAENSE. *Devonian.*

9. Right lateral view of corallum with flattened apex.
10. View of the calyx of a corallum.

Both examples from the Middle Devonian red clay, near Louisville.

CHONOPHYLLUM NANUM, Nov. Spec. *Devonian.*

11. Left lateral view of a corallum of average size.
12. Similar view of a corallum of unsymmetrical growth above medium size.
13. View of the calyx of a small corallum.

From the dark-red clay of the Upper Devonian encrinal limestone, near Louisville

PLATE 80.

CYATHOPHYLLUM GREENI, Nov. Spec. *Devonian.*

14. View of the calyx of a corallum, from the Middle Devonian, Falls of the Ohio.

NICHOLSONIA CANADENSIS. *Devonian.*

15. Corallets attached to Stromatopora, from the Middle Devonian, Falls of the Ohio.

NICHOLSONIA ANGULATA, Nov. Spec *Devonian.*

16. Corallum incrusting Stromatopora texilis, from the blue clay of the Middle Devonian, Falls of the Ohio.

CYATHOPHYLLUM MULTIGEMMATUM, Nov. Spec. *Devonian.*

17. View of confluent calyces of corallets, from the Middle Devonian waste, Marion county, Kentucky.

ZAPHRENTIS IMMANIS, Nov. Spec. *Devonian.*

18. Central view and oblique view of calyces of twin coralla, from the Middle Devonian clay, near Louisville.

The examples figured in this plate belong to the collection of the author.

PLATE 81.

CYATHOPHYLLUM POCILLUM, Nov. Spec. *Devonian.*

1. Central view of a rapidly expanding corallum. Collection of Mr. McConathy.
2. Central view of a corallum of typical size and shape. Collection of the author.
3. Calyx of a corallum. Collection of the author.
5. Corallum of gigantic dimensions, with oblique section of the calyx-wall, showing the sub-vesicular cellulose tissue of the interloculi. Collection of the author.

Found in the red clay of the Middle Devonian, near Louisville.

BLOTHROPHYLLUM CORIUM, Nov. Spec. *Devonian.*

4. Right lateral view of corallum, with apex flattened by attachment to an extraneous object, from the Middle Devonian red clay, near Louisville. Collection of the author.

PLATE 81.

PLATE 82.

PLATE 82.

CYATHOPHYLLUM FIMBRIATUM, Nov. Spec. *Devonian.*

1. Central view of a flexuous corallum, with epitheca denuded, from the blue clay of the Middle Devonian, Falls of the Ohio.
2. Right lateral view of a weathered corallum, from the same horizon and place.
3. Calyx of a corallum; the figure also shows the margins of some of the inferior invaginated calyces; from the Middle Devonian red clay, near Louisville.

Collection of the author.

CYATHOPHYLLUM INSIGNE, Nov. Spec. *Devonian.*

4. Right lateral view of a jejune corallum, with apical scar of attachment during growth.

PLATE 83.

CYATHOPHYLLUM MULTICRENA, Nov. Spec. *Devonian.*

1. Right lateral view of a corallum of slender habit, from the Middle Devonian red clay, near Louisville.
2. Left lateral view of a symmetrical corallum of average size, from the same horizon and neighborhood.
3. Right lateral view of a young corallum, from the blue clay of the Middle Devonian, Falls of the Ohio.
4. Calyx of a corallum.
5. Calyx of a very large corallum of which the circular elevated rim of the diaphragm has been fortuitously broken down.

Examples 4 and 5 are from the horizon and locality of example 3.

CYATHOPHYLLUM ŒDIPUS, Nov. Spec. *Devonian.*

6. Left lateral view of a small corallum, from the Lower Devonian ferruginous clay, near Louisville.
7. Central view of a small corallum.
8. Left lateral view of a corallum of medium size.
9. Right lateral view of a corallum.

Examples 7, 8, 9, are from the horizon and vicinage of example 6.

CYATHOPHYLLUM FLOS, Nov. Spec. *Niagara.*

10. Calyx view of a corallum from the Upper Niagara white clay, near Louisville.

CYATHOPHYLLUM CORALLIFERUM. *Devonian.*

11. Calyces of corallets, varying in size, imbedded in Stromatopora, as is usual with the species; from the blue clay of the Middle Devonian, Falls of the Ohio.

CYATHOPHYLLUM PUMILUS, Nov. Spec. *Devonian.*

12. Left lateral view of a corallum slightly below medium size, with apical scar; from the Middle Devonian blue clay, Falls of the Ohio.

CYATHOPHYLLUM WINCHELLI, Nov. Spec. *Devonian.*

13. Right lateral view of a corallum of average size, with small circular apical scar.
14. Calyx of a corallum.

From the Middle Devonian blue clay, Falls of the Ohio.

The examples figured in this Plate are from the collection of the author.

PLATE 83.

PLATE 84.

PLATE 84.

CYATHOPHYLLUM ŒDIPUS, Nov. Spec. *Devonian.*

Composite corallum, partly imbedded in rock matrix, from the Lower Devonian, Falls of the Ohio.

Collection of the author.

PLATE 85.

CYATHOPHYLLUM ROBUSTUM. *Devonian.*

1. Adult corallum: left lateral view.
2. Right lateral view of a corallum.
3. Calyx of a corallum, the linear edges of whose lamellæ are broken down so as to show the cellulose inner walls.
4. Right lateral view of a young corallum.
5. (Central specimen.) View of calyx and central exterior of an unsymmetrical jejune corallum, with well-preserved acute lamellæ but abnormally shaped diaphragm.

The examples figured were cut from the Lower Devonian rocks, Falls of the Ohio.

Example 4 is from the collection of Mr. Gaines; the others from the collection of the author.

PLATE 85.

PLATE 86.

PLATE 86.

CYATHOPHYLLUM RADICULA. *Niagara.*

1. Left lateral view of large corallum, with the gem of an inferior calyx still adherent, from the Upper Niagara white clay, near Louisville. Collection of Mr. Gaines.
2. 3. 4. Typically flexuous coralla: example 4 from the Upper Niagara red clay, the others from the slightly lower horizon of the white clay, near Louisville. Collection of the author.
5. A sessile corallum, with calycinal gem, from the horizon and neighborhood of example 4. Collection of the author.
6. Right lateral view of a stout sessile corallum, with inchoate root-like processes of attachment, common to most Niagara cyathophylloids; from the horizon and locality of example 4. Collection of the author.

CYATHOPHYLLUM TORNATUM, Nov. Spec. *Devonian.*

7. Left lateral view of a corallum from the inferior stratum of the dark-red encrinal-limestone clay of the Upper Devonian, near Louisville. Collection of the author.
8. Exterior view of a corallum, showing rounded apex and wrinkled epitheca, from the horizon and neighborhood of example 7. Collection of the author.
9. Calyx of a corallum, from the same horizon and place. Collection of the author.
10. 11. Left lateral views (prostrate) of unusually long and slender coralla, from the horizon and vicinage of the previous examples. Collection of the author.

CYATHOPHYLLUM SCYPHUS. *Devonian.*

12. Right lateral view of a corallum of geniculated form.
13. Left lateral view of a corallum of medium size, with circular apical scar.
14. Calyx of a corallum, with gem. From the horizon and vicinage of C. tornatum, figured in this Plate.

Collection of the author.

PLATE 87.

CYATHOPHYLLUM MULTIGEMMATUM, Nov. Spec. *Devonian.*

View of exterior apertural side of ancestral corallet. The central form is not a corallet of the community, but is held in embracement. Cut from the Lower Devonian limestone, near Louisville. Collection of the author.

[NOTE.—Turn the Plate so as to view it from the right side.]

PLATE 87.

PLATE 88.

PLATE 88.

CYATHOPHYLLUM MULTIGEMMATUM, Nov. Spec. *Devonian.*

1. View along the line of the apertural gap of the ancestral corallet; right and left lateral views of its progeny. From the horizon and locality of the specimen figured in Plate 87.

CYATHOPHYLLUM LIGATUM, Nov. Spec. *Devonian.*

2. Right and left lateral views of inosculating gems detached from the maternal corallum, with epitheca removed so as to show the concave interlocular dissepiments. From the Lower Devonian rocks, Falls of the Ohio.

4. Calyx of a corallum, with bell-shaped wall, from the ferruginous clay of the Lower Devonian, near Louisville.

CYATHOPHYLLUM DETEXTUM, Nov. Spec. *Devonian.*

3. View of a corallum (prone), the lower half of which shows the exterior right lateral gap-line, and the upper half the exterior surface symmetrical with the line of the apertural gap. From the Lower Devonian, Falls of the Ohio.

The specimens figured belong to the collection of the author.

PLATE 89.

DIPHYPHYLLUM VERNEUILANUM. *Devonian.*

1. Exterior lateral view of a corallum from the Middle Devonian red clay, near Louisville. Collection of the author.

CYATHOPHYLLUM MULTIGEMMATUM, Nov. Spec. *Devonian.*

2. Exterior lateral views of inosculated corallets accidentally broken from their parent, from the Middle Devonian waste of Marion county, Kentucky. Collection of Mr. Linney.

PLATE 89.

PLATE 90.

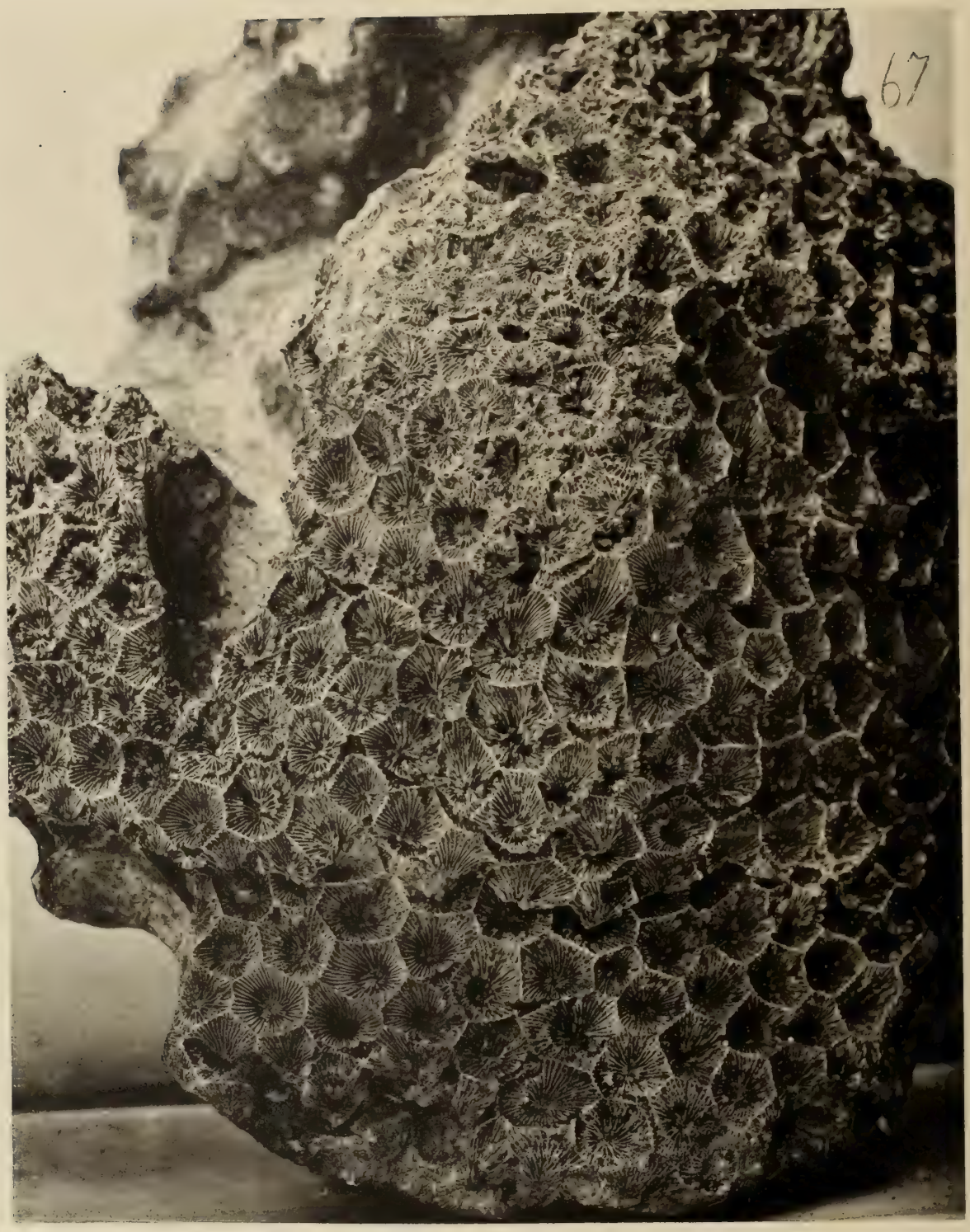


PLATE 90.

CYATHOPHYLLUM RUGOSUM. *Devonian.*

Upper surface of a corallum from the Middle Devonian rocks, Falls of the Ohio. Collection of the author.

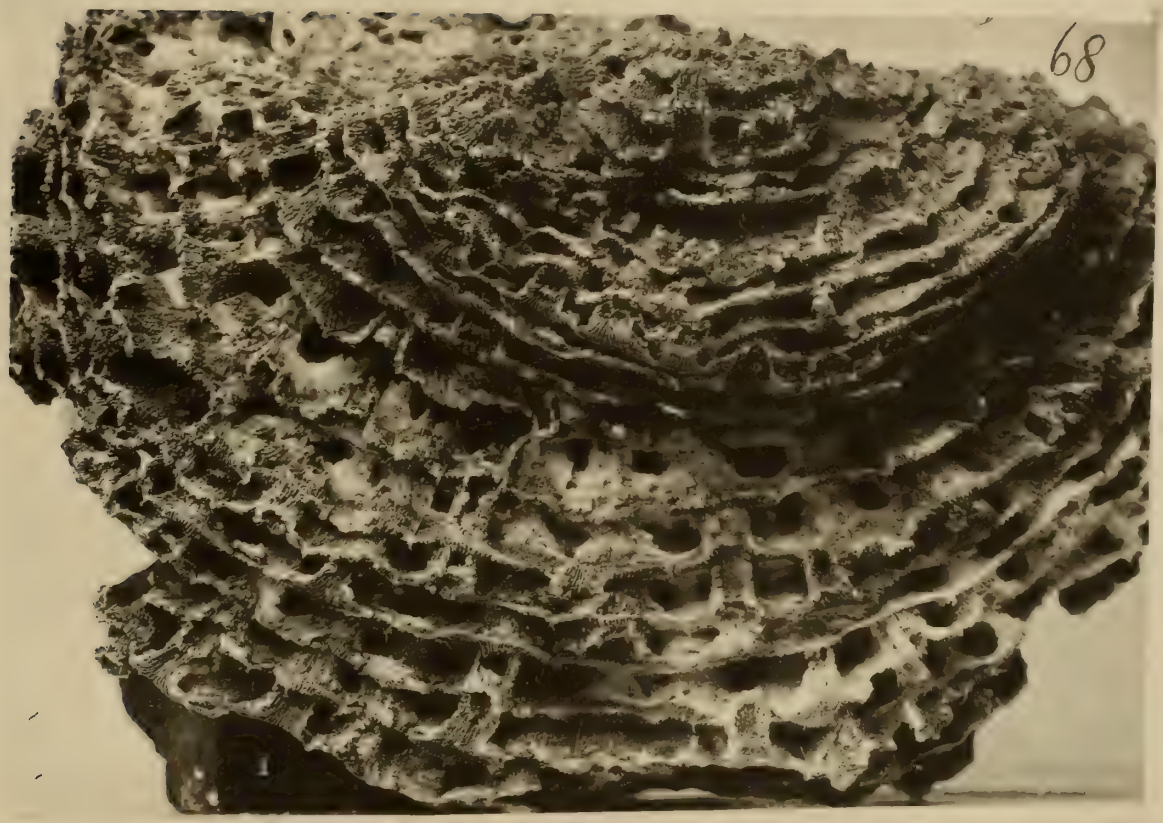
PLATE 91.

CYATHOPHYLLUM COLLIGATUM. *Devonian.*

1. Under surface of a corallum from the ferruginous clay of the Lower Devonian, near Louisville.
2. Upper surface of a corallum from the same horizon and neighborhood.

Collection of the author.

PLATE 91.



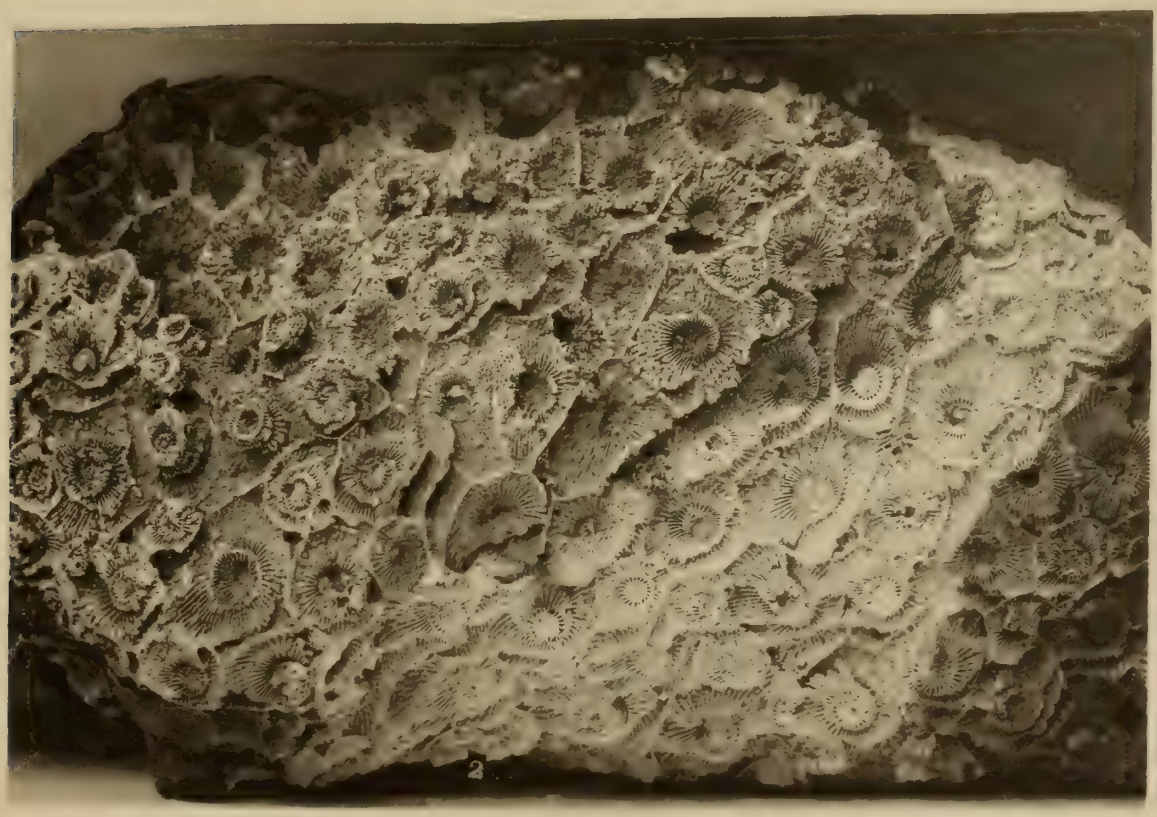


PLATE 92.

PLATE 92.

CYATHOPHYLLUM COLLIGATUM. *Devonian.*

1. Vertical section of specimen Fig. 2, Plate 91.

CYATHOPHYLLUM HALLI. *Devonian.*

2. Calyx of corallum Fig. 1, Plate 77.
3. Calyx of a corallum of medium size, bell-shaped, from the red clay of the Middle Devonian, near Louisville. Collection of the author.

CYATHOPHYLLUM MULTIGEMMATUM, Nov. Spec. *Devonian.*

4. Three small inosculated gems fortuitously detached from the inferior corallet; from the Middle Devonian waste, Lincoln county, Kentucky. Collection of Mr. Linney.

PLATE 93.

CYATHOPHYLLUM OVOIDEUM, Nov. Spec. *Devonian.*

1. Upper surface of a corallum from the decomposed chert of the Middle Devonian, near Louisville.

CYATHOPHYLLUM DAVIDSONI. *Devonian.*

2. Upper surface of a corallum from the rotten chert of the Middle Devonian, Falls of the Ohio.

CYATHOPHYLLUM RUGOSUM. *Devonian.*

3. Upper surface of a fragment showing cristate calyx-walls, from the Middle Devonian red clay, near Louisville.

Collection of the author.

PLATE 93.

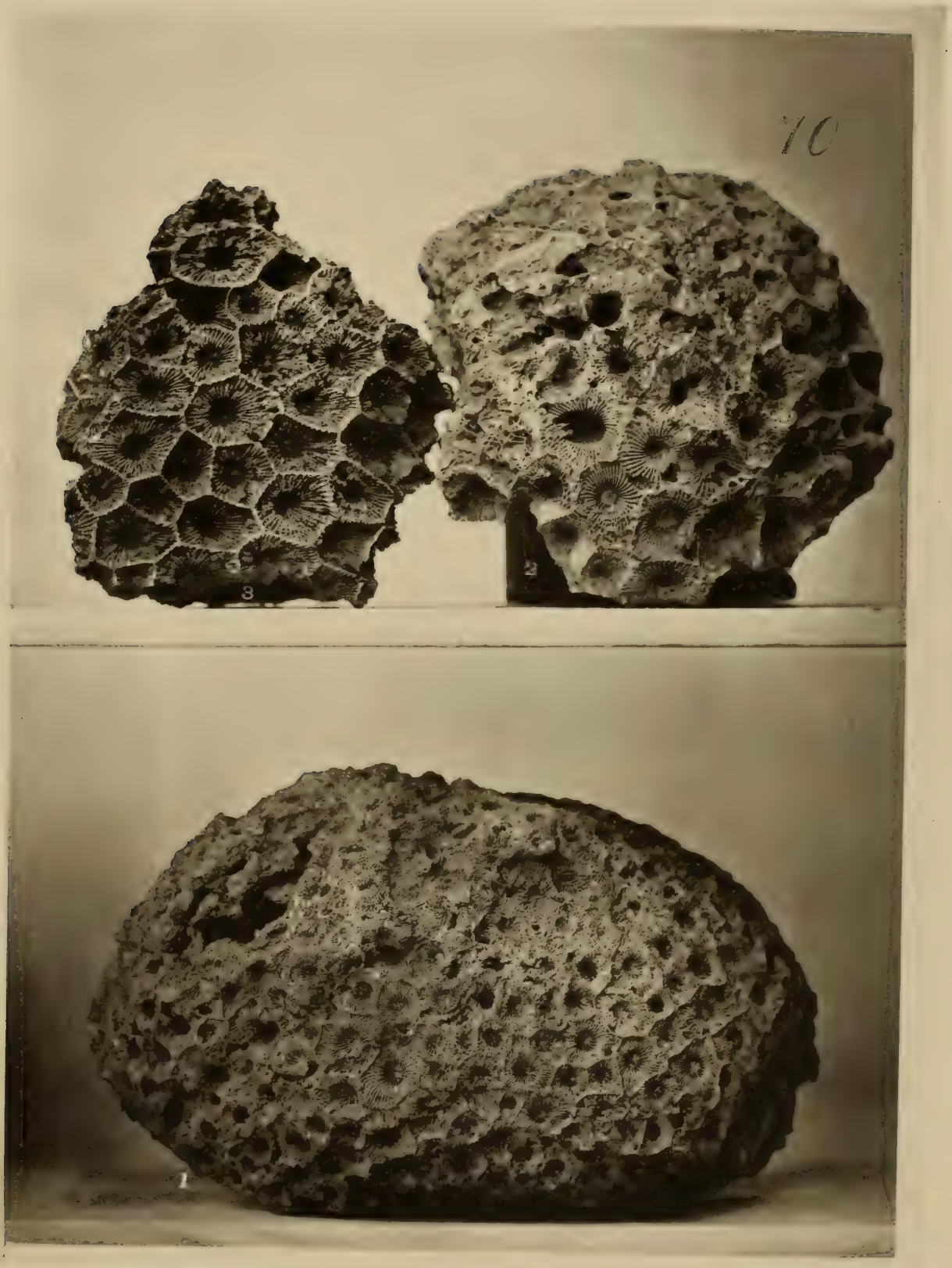


PLATE 94.

PLATE 94.

ACROPHYLLUM ONEIDAENSE. *Devonian.*

1. (Oblique) anterior, or central-gap view of a corallum of average size, with calyx wall broken so as to show the cone-shaped diaphragm; from the Lower Devonian, Falls of the Ohio.
2. Right lateral view (prostrate) of a small corallum, more conical than the typical specimens. From the horizon and locality of the preceding example.

ACROPHYLLUM ELLIPTICUM, Nov. Spec. *Devonian.*

3. Anterior, or central-gap view of a corallum, with wall removed so as to show the bottom of the calyx; from the horizon and place of C. oneidaense.

The specimens belong to the collection of the author.

PLATE 95.

AULACOPHYLLUM SULCATUM. *Devonian.*

1. Anterior, or central-gap view and view of the calyx of a corallum, from the Middle Devonian rocks, Falls of the Ohio.
2. Left lateral view of a weathered corallum, from the Middle Devonian red clay, near Louisville.
3. Posterior, or apertural-gap view of a weathered corallum, from the Middle Devonian red clay, near Louisville.

[NOTE.—The arrangement of the lamellæ about the line of the apertural-gap may be observed.]

AULACOPHYLLUM PARVUM, Nov. Spec. *Devonian.*

4. View of the central-gap line and of the calyx of a corallum, from the red clay of the Middle Devonian, near Louisville.

AULACOPHYLLUM UNGULOIDEUM, Nov. Spec. *Devonian.*

5. View of central-gap line and of the calyx of a corallum of medium size, from the Lower Devonian rocks, Falls of the Ohio.

[NOTE.—In this specimen are conspicuously shown the four gaps proper to Cyathophylloids, and the consequent fascicular grouping of the lamellæ.]

6. Similar view of a corallum, in which the central and lateral gaps are obscure, but showing the lamella occupying the center of the apertural-gap fovea.
7. Left lateral-gap view of a corallum (prone). This and example 6 are from the same horizon and place as example 5.

[NOTE.—The arrangement of the lamellæ about the line of the left lateral gap is noticeable.]

8. View of the calyx of a weathered corallum, from the Lower Devonian ferruginous clay, near Louisville.

[NOTE.—In this example some of the lamellæ beyond the lateral gaps remain erect, and by their co-incidental meeting have the appearance of continuous plications from opposite margins of the wall.]

AULACOPHYLLUM INSIGNE. *Devonian.*

9. View of the central gap and of the calyx of a corallum, whose lamellæ are fortuitously broken down in the calyx bottom. From the manganese limestone of the Lower Devonian, Falls of the Ohio.

The examples are from the collection of the author.

PLATE 95.

PLATE 96.

PLATE 96.

AULACOPHYLLUM MUTABILE, Nov. Spec. *Devonian.*

1. Left lateral view of a weathered corallum.
2. View of central-gap side and posterior portion of the calyx of a corallum, indicating the formation of the calyx floor.
3. Right lateral view of a corallum with anterior wall broken down.
4. Posterior view of a corallum.
5. Oblique lateral view of a badly weathered corallum, whose lamellæ were incrassated by the process of fossilization.
6. Front, or central-gap view of a corallum with anterior wall fortuitously removed, showing the sub-cellulose structure of the wall.
7. View of the calyx of a corallum (prone), showing a secondary calyx of cystose structure.
8. Anterior view of a corallum in which the secondary calyx is laminated.

Specimens 1–6 are found in the Middle Devonian red clay, near Louisville.

Specimens 7 and 8 are found in the Middle Devonian blue clay, Falls of the Ohio.

The examples figured belong to the collection of the author.

PLATE 97.

BLOTHROPHYLLUM LIRATUM, Nov. Spec. *Devonian.*

1. Left lateral view of a weathered corallum, with epitheca denuded, showing the ridge along the line of the apertural gap; from the blue clay of the Middle Devonian, Falls of the Ohio.

AULACOPHYLLUM CONIGERUM, Nov. Spec. *Devonian.*

2. Calyx of a corallum from the dark-red clay derived from the encrinal limestone of the Upper Devonian, near Louisville.

ACROPHYLLUM CLARKI, Nov. Spec. *Devonian.*

3. Right lateral view of a corallum of medium size, with flattened apex.
4. Left lateral view of a large corallum with flattened apex.
5. Posterior view of a corallum, with apex taking shape from the object to which the corallum attached in the early stages of growth.
6. Posterior view of a corallum from which the epitheca has been removed by weathering.

   Examples 3–6 are from the horizon and vicinage of A. conigerum, Fig. 2.

CYATHOPHYLLUM INFOVEATUM, Nov. Spec. *Devonian.*

7. View of the calyx and oblique anterior view of a corallum, from the Lower Devonian red clay, near Louisville.
8. Similar view of a corallum, from the Upper Devonian encrinal limestone dark-red clay, near Louisville.

ZAPHRENTIS GALLICALCAR, Nov. Spec. *Devonian.*

9. Posterior view of a corallum of adult size.
10. Anterior view of a corallum.
11. Right lateral view of a corallum.
12. 13. Views of calyces of coralla.
14. Left lateral view of a young specimen.
15. Left lateral view of a jejune corallum of irregular growth.

    From the horizon and vicinage of A. conigerum.

PLATE 97.

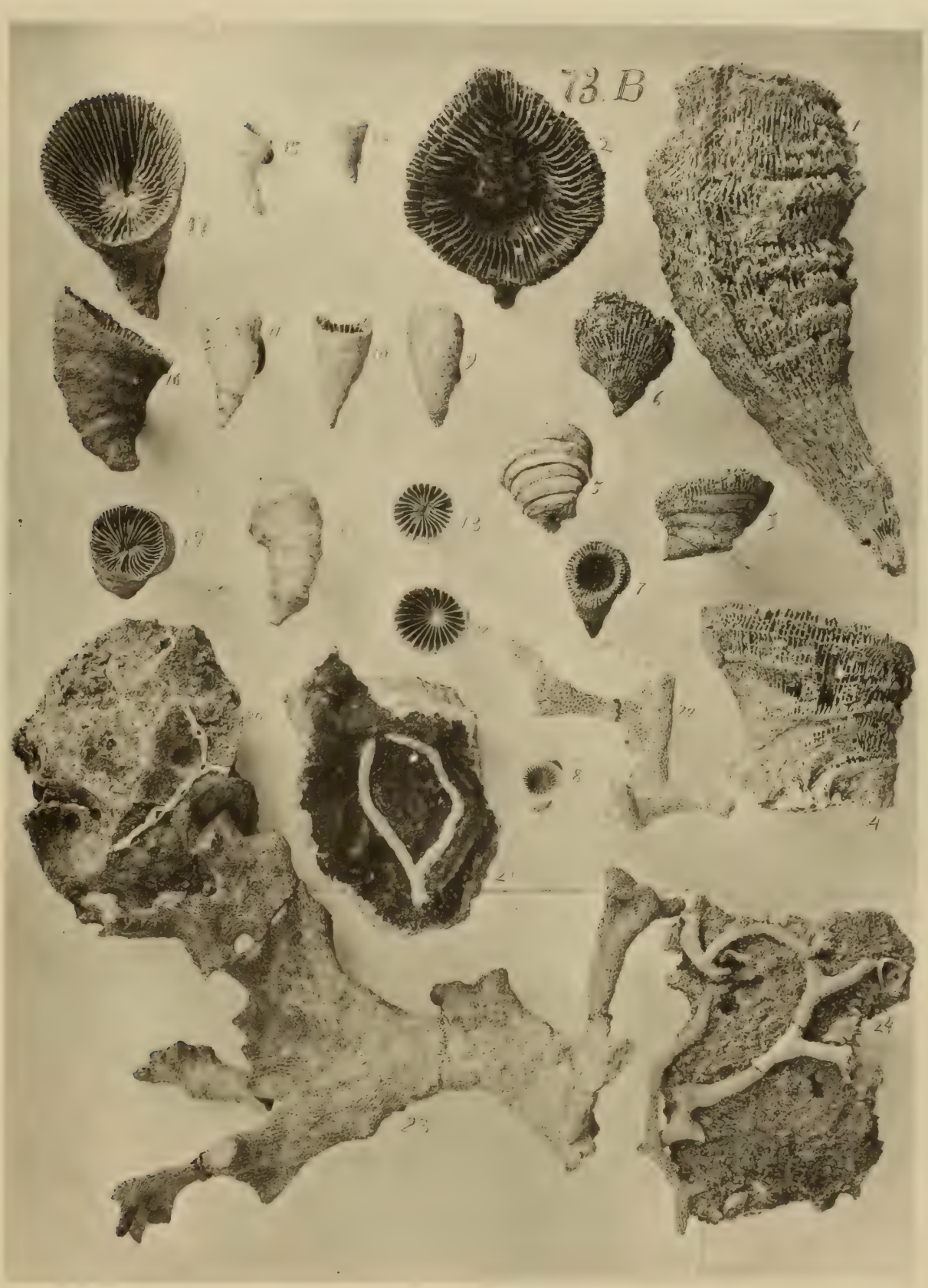


PLATE 97—*Continued.*

ZAPHRENTIS CORNALBA, Nov. Spec. *Devonian.*

16. Left lateral view of an adult corallum.
17. View of the calyx and oblique anterior view of a corallum.
From the horizon and vicinage of A. conigerum.

ZAPHRENTIS NETTELROTHI, Nov. Spec. *Devonian.*

18. Left lateral view of an adult corallum.
19. View of the calyx of a corallum.
Found in the vicinage and horizon of A. conigerum.

AULOPORA PRECIUS. *Niagara.*

20. Corallets incrusting an eroded fragment of Strombodes pentagonus, from the Upper Niagara red clay, near Louisville.

CLADOPORA PROBOSCIDALIS, Nov. Spec. *Niagara.*

21. Front lateral view of frond partly imbedded in rock matrix, from the white clay strata of the Upper Niagara, near Louisville.

CLADOPORA ALCICORNIS, Nov. Spec. *Devonian.*

22. Upper fronds of a corallum.
23. Front lateral view of a frond of typical form.
From the horizon and vicinage of A. conigerum.

CLADOPORA GULIELMI, Nov. Spec. *Devonian.*

24. Front lateral view of fronds partly imbedded in a fragment of decomposing encrinal limestone; from the horizon and neighborhood of A. conigerum.

With the exception of example 4, which was collected by Mr. Gaines, the specimens figured in this Plate belong to the collection of the author.

PLATE 98.

BLOTHROPHYLLUM DECORTICATUM. . *Devonian.*

1. Lateral view of an adult corallum of average size and usual form, from the Lower Devonian rocks, Falls of the Ohio.
2. Lateral view of the upper portion of a corallum partly imbedded in its rock matrix, with closely set explanate rims of the invaginating calyces; from the rocks of the Lower Devonian formation, near Louisville.

Collection of the author.

PLATE 98.

PLATE 99.

PLATE 99.

BLOTHROPYLLUM DECORTICATUM. *Devonian.*

1. View of the calyx of a corallum, with depressed floor.
2. View of the calyx of a corallum, without a diaphragm.
3. View of the calyx of a corallum, with the diaphragm as it commonly appears.

From the horizon and vicinage of example Fig. 1, Plate 98.

BLOTHROPHYLLUM SESSILE, Nov. Spec. *Devonian.*

4. View of the calyx of a corallum, from the blue clay of the Middle Devonian, Falls of the Ohio.
5. Similar view of the calyx of a corallum, from the same horizon and place.

BLOTHROPHYLLUM LOUISVILLENSE, Nov. Spec. *Devonian.*

6. View of the calyx and oblique anterior view of a corallum, from the horizon and locality of B. sessile, Figs. 4. and 5.

BLOTHROPHYLLUM CINCTUTUM, Nov. Spec. *Devonian.*

7. View of the calyx of a corallum, from the Middle Devonian blue clay, Falls of the Ohio.
8. Right lateral view of a small corallum, from the same horizon and place.

BLOTHROPHYLLUM APPROXIMATUM. *Devonian.*

9. Upper portion of a corallum, from the blue clay of the Middle Devonian, Falls of the Ohio.

BLOTHROPHYLLUM NIAGARENSE, Nov. Spec. *Niagara.*

10. Lateral view of a flexuous corallum, from the Upper Niagara white clay stratum, ten feet below the Niagara and Devonian passage-beds, near Louisville.

The specimens figured in this Plate are from the collection of the author.

PLATE 100.

BLOTHROPHYLLUM PARVULUM, Nov. Spec. *Devonian.*

1. 2. 3. Lateral views of adult coralla, from the Middle Devonian red clay, near Louisville.

BLOTHROPHYLLUM CINCTUTUM, Nov. Spec. *Devonian.*

4. Lateral view of an adult corallum of flexuous form, from the blue clay of the Middle Devonian, Falls of the Ohio.

[NOTE.—The apex and several inches of the lower part of the corallum are concealed from view by geniculation.]

5. Anterior view and oblique view of the calyx of the upper portion of a corallum, from the same horizon and locality.
6. Calyx of a corallum from the same horizon and locality.

BLOTHROPHYLLUM LOUISVILLENSE, Nov. Spec. *Devonian.*

7. Anterior, or central-gap view of the upper portion of a corallum.
8. View of the calyx of a corallum.

Both from the blue clay beds of the Middle Devonian, Falls of the Ohio.

BLOTHROPHYLLUM SESSILE, Nov. Spec. *Devonian.*

9. Left lateral view of the corallum figured in Plate 99, Fig. 4.
10. Left lateral view of a corallum from the same horizon and locality.
11. Central gap view of a corallum with small apical scar of attachment, from the Middle Devonian red clay, near Louisville.
12. View of the calyx of a corallum from the horizon and neighborhood of the preceding example.

CYSTIPHYLLUM PLICATUM, Nov. Spec. *Devonian.*

13. Posterior view of a corallum from the Lower Devonian rocks, Falls of the Ohio.

[Introduced here for comparison with the Blothrophylla, to which it bears a superficial resemblance.]

BLOTHROPHYLLUM APPROXIMATUM. *Devonian.*

14. Lateral view of the upper portion of a corallum, from the Middle Devonian blue clay, Falls of the Ohio.
15. View of the calyx of a large corallum from the Middle Devonian red clay, near Louisville.

Specimens figured in this plate are from the collection of the author, with the exception of Cystiphyllum plicatum, Fig. 13, which belongs to Mr. Gaines.

PLATE 100.

PLATE 101.

PLATE 101.

CYATHOPHYLLUM POCILLUM, Nov. Spec. *Devonian.*

1. Longitudinal section of a corallum, from the Upper Devonian red clay, near Louisville. Collection of the author.

CALCEOLA PROTEUS, Nov. Spec. *Niagara.*

2. Inner surface of an operculum, from the Upper Niagara white clay beds, near Louisville. Collection of Dr. Knapp.

CHONOPHYLLUM MAGNIFICUM. *Devonian.*

3. View of the calyx of a corallum of medium size, from the manganese limestone rocks of the Lower Devonian, Falls of the Ohio. Collection of the author.

BLOTHROPHYLLUM LOUISVILLENSE, Nov. Spec. *Devonian.*

4. Left lateral view of a corallum, from the Middle Devonian blue clay, Falls of the Ohio.

5. Similar view of a corallum, from the same horizon and place.

BLOTHROPHYLLUM CINCTUTUM, Nov. Spec. *Devonian.*

6. Longitudinal section of a fragment, showing arrangement of the diaphragms, etc., from the locality and horizon of the preceding species of Blothrophyllum. Collection of Dr. Knapp.

CYATHOPHYLLUM PUMILUS, Nov. Spec. *Devonian.*

7. View of the calyx of a corallum, from the red clay of the Middle Devonian, near Louisville. Collection of the author.

BLOTHROPHYLLUM CORIUM, Nov. Spec. *Devonian.*

8. Left lateral view of a corallum, from the upper part of which the epitheca has been fortuitously denuded; from the Middle Devonian red clay, near Louisville.

11. Right lateral view of a corallum, from the Middle Devonian blue clay, Falls of the Ohio.

9. View of the calyx of a sessile corallum, from the horizon and neighborhood of example Fig. 8.

The specimens are from the collection of the author.

AULACOPHYLLUM PARVUM, Nov. Spec. *Devonian.*

10. View of the calyx and oblique anterior view of a corallum, with small apical scar; from the Middle Devonian blue clay, Falls of the Ohio. Collection of the author.

PLATE 102.

BLOTHROPHYLLUM LIRATUM, Nov. Spec. *Devonian.*

1. View of the calyx of the corallum figured in Plate 97, Fig. 1.

AULACOPHYLLUM CONIGERUM, Nov. Spec. *Devonian.*

2. Left lateral view of a flexuous corallum, from the dark-red clay of the Upper Devonian encrinal limestone, near Louisville.
3. View of the calyx and oblique anterior view of a corallum (inverted), from the same horizon and neighborhood.

ACROPHYLLUM CLARKI, Nov. Spec. *Devonian.*

4. View of the calyx of corallum figured in Plate 97, Fig. 3.
5. View of the calyx of corallum in Fig. 4, Plate 97.
6. View of the calyx of corallum in Fig. 5, Plate 97.
7. View of the calyx of corallum in Fig. 6, Plate 97.

BLOTHROPHYLLUM ZAPHRENTIFORME, Nov. Spec. *Devonian.*

8. Left lateral view of a corallum of average size.
9. Similar view of a corallum.
10. Right lateral view of a corallum.
11. Left lateral view of a stout corallum.
12. Right lateral view of a corallum.
13. Right lateral view of a corallum, whose epitheca has been fortuitously removed.
14. Right lateral view of a corallum of gigantic dimensions.
15. 16. Views of calyces of coralla (inverted).

The examples of this species figured, with the exception of example 14, which is from Crab Orchard, are from the horizon and vicinage of Aulacophyllum conigerum.

The specimens figured in this Plate belong to the collection of the author.

PLATE 102.

PLATE 103.

PLATE 103.

NETTELROTHIA (Nov. Gen.) CRATERIFORME, Nov. Spec. *Devonian.*

1. View of the under surface of a sarcodeme.
2. Lateral view of a sarcodeme (inverted).

From the encrinal limestone of the Upper Devonian, near Louisville.

[NOTE.—This form does not belong to the Polypi, but to the Protista. For this reason it is not described in the descriptive text of this work. It will be described in another work now in preparation.]

HADROPHYLLUM D'ORBIGNYI. *Devonian.*

3. 4. 5. 6. 7. Views of calyces of coralla.
8. 9. 10. 11. Lateral views of coralla of varying form and size.

From the red clay of the Middle Devonian, near Louisville.

CHONOPHYLLUM MAGNIFICUM. *Devonian.*

12. Lateral view of a corallum, from the ferruginous clay of the Lower Devonian, near Louisville.
13. Lateral view of a corallum, with epitheca denuded, from the manganese limestone of the Lower Devonian, Falls of the Ohio.
14. View of a portion of the calyx of a well preserved fragment, from the horizon and neighborhood of example in Fig. 12.

With the exception of example 14, which belongs to Mr. McConathy, the specimens herein figured are from the collection of the author.

PLATE 104.

CYATHAXONIA GAINESI, Nov. Spec. *Niagara.*

1. View of the calyx of a corallum.
2. Anterior view of a young corallum.
3. Left lateral view of a corallum.
4. Right lateral view of a corallum.
5. Posterior view of a corallum.
6. Anterior view of a corallum.

From the lowest strata of the Niagara period, near Louisville.

PTYCHOPHYLLUM IPOMŒA, Nov. Spec. *Niagara.*

7. (Upper left specimen.) Under surface of a corallum, from the Upper Niagara white clay, near Louisville.

OMPHYMA VERRUCOSA. *Niagara.*

8. (Central specimen.) Right lateral view of a corallum, from the Upper Niagara ferruginous clay, near Louisville.
9. (Right central specimen.) Right lateral view of a corallum, from the white clay beds of the Upper Niagara, near Louisville.
10. Posterior view of a corallum, with part of the calyx wall broken off.
11. Anterior view of a large corallum, with partially denuded epitheca.

Examples 10 and 11 are from the horizon and vicinage of example 8.

All the specimens are from the collection of the author.

PLATE 104.

PLATE 105.

PLATE 105.

PTYCHOPHYLLUM STOKESI. *Niagara.*

1. Left lateral view of a corallum of average size.
2. (Upper central specimen.) View of the calyx of a corallum.
3. (Central Specimen.) Posterior view of a corallum attached by its radicels to an extraneous object.
4. (Left central specimen.) Lateral view of coralla mutually attached.
5. View of the calyces of three inosculated coralla.
6. (Left upper specimen.) View of a proliferous corallum.
7. View of the calyx of a corallum, invaginated within the inferior calyx.

All from the red clay of the Upper Niagara, near Louisville.

Example 5 from the collection of Mr. McConathy; example 6 from the collection of Mr. Nettelroth; the others from the collection of the author.

PTYCHOPHYLLUM INVAGINATUM, Nov. Spec. *Niagara.*

8. Right lateral view of a corallum, from the red clay of the Upper Niagara, one foot below the Niagara and Devonian passage-beds, near Louisville. Collection of the author.

PTYCHOPHYLLUM IPOMŒA, Nov. Spec. *Niagara.*

9. View of the calyx of the corallum figured in Plate 104, Fig. 7.
10. (Lower central specimen.) Oblique right lateral view of a young gemmiferous corallum, from the Upper Niagara red clay, near Louisville. Collection of the author.

OMPHYMA VERRUCOSA. *Niagara.*

11. View of the calyx of a corallum, from the Upper Niagara white clay, near Louisville. Collection of the author.

PLATE 106.

PTYCHOPHYLLUM TROPŒUM, Nov. Spec. *Devonian.*

1. (Lower right specimen.) Anterior view of a corallum of average size.
2. (Lower central specimen.) Posterior view of a corallum.
3. View of the calyx of a large corallum.

From the Lower Devonian rocks, Falls of the Ohio.

PTYCHOPHYLLUM DIAPHRAGMA, Nov. Spec. *Devonian.*

4. (Lower left specimen.) Left lateral view of an adult corallum.
5. View of the calyx of a corallum, with portion of the right wall fortuitously broken.

From the horizon and vicinage of the preceding species.

PTYCHOPHYLLUM TYPICUM, Nov. Spec. *Devonian.*

6. Right lateral view of a corallum, from the Middle Devonian clay of Lincoln county.
7. View of the calyx of a corallum, from the blue clay of the Middle Devonian, Falls of the Ohio.

PTYCHOPHYLLUM CONIFERUM, Nov. Spec. *Devonian.*

8. (Right of center.) Right lateral view of a corallum, from the Lower Devonian clay of Lincoln county.
9. (Left of center.) Posterior view of a corallum, from the Lower Devonian rocks, Falls of the Ohio.
10. Right lateral view of a corallum.
11. (Upper central specimen.) Right lateral view of a corallum, with calyx wall broken down so as to show the sub-vesicular central cone.

Examples 10 and 11 are from the horizon and vicinage of example 9.

The specimens figured in the Plate are from the collection of the author.

PLATE 106.

KENTUCKY GEOLOGICAL SURVEY.

PLATE 107.

PLATE 107.

ERIDOPHYLLUM ERUCIFORME, Nov. Spec. *Niagara.*

Front lateral view of corallets, from the Upper Niagara red clay near Louisville. Collection of the author.

PLATE 108.

ERIDOPHYLLUM SENTUM, Nov. Spec. *Niagara.*

1. Upper surface view of a corallum, from the Upper Niagara red clay, near Louisville. Collection of the author.

DIPHYPHYLLUM BELLIS, Nov. Spec. *Devonian.*

2. Upper surface view of a corallum, from the Middle Devonian red clay, near Louisville. Collection of the author.

DIPHYPHYLLUM ARCHIACI. *Devonian.*

3. Lateral view of a corallum, from the dark-red clay derived from the encrinal limestone of the Upper Devonian, near Louisville. Collected by Mr. Goodwin.

PLATE 108.

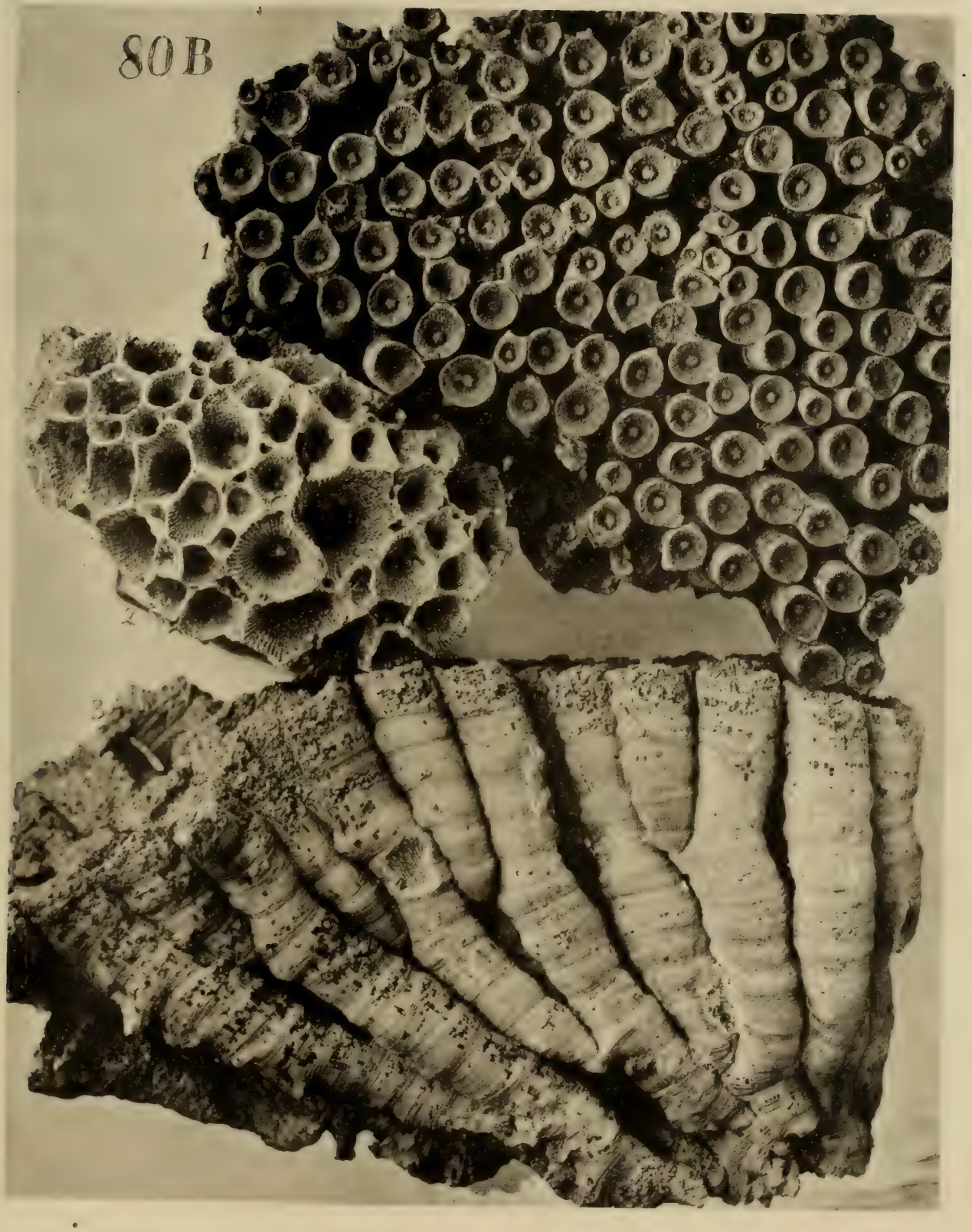


PLATE 109.

PLATE 109.

ERIDOPHYLLUM RUGOSUM. *Niagara.*

1. Rear lateral view of corallets (prostrate), from the red clay of the Upper Niagara, near Louisville. [Jejune example.]

ERIDOPHYLLUM HURONICUM. *Niagara.*

2. Front lateral view of a fragment, from the horizon and neighborhood of E. rugosum, Fig. 1.

ERIDOPHYLLUM DIVIDUUM, Nov. Spec. *Devonian.*

3. View of the upper surface of a composite corallum, partly imbedded in chert, from the red clay of the Upper Niagara, near Louisville.
4. Lateral view of a composite corallum, from the white clay of the Upper Niagara, near Louisville.
5. Lateral view of a composite corallum, from the red clay of the Upper Niagara, near Louisville. Collection of Mr. Nettelroth.
6. Lateral view of two corallets detached from their parent, showing connective processes; from the Upper Niagara red clay, near Louisville.
7. Right lateral view of a corallum, from the Upper Niagara white clay, near Louisville.
8. Left lateral view of a corallum, from the Upper Niagara red clay, near Louisville.
9. Right lateral view of a small corallum.
10. View of the calyx of a corallum.
11. Lateral view of a small gemmiferous corallum.
12. View of the calyx of the parent corallet, with gems adherent.

The last four specimens are from the Upper Niagara red clay, near Louisville.

With the exception of specimen 5, the examples figured in this Plate belong to the collection of the author.

PLATE 110.

ERIDOPHYLLUM RUGOSUM.

Oblique sectional view of corallets (prostrate), from the red clay of the Upper Niagara, near Louisville.

Collection of the author.

PLATE 110.

KENTUCKY GEOLOGICAL SURVEY.

PLATE 111.

PLATE 111.

ERIDOPHYLLUM HURONICUM.

Portion of longitudinal section through corallum, from the stratum of white clay of the Upper Niagara, ten feet below the Niagara and Devonian passage-beds, near Louisville.

Collection of the author.

PLATE 112.

ERIDOPHYLLUM SIMCOENSE. *Devonian.*

1. Lateral view of corallets, from the Lower Devonian, Falls of the Ohio.

ERIDOPHYLLUM ARUNDINACEUM. *Devonian.*

2. Lateral view of corallets, partly imbedded in rock matrix, from the Lower Devonian, Falls of the Ohio.

DIPHYPHYLLUM ARCHIACI. *Devonian.*

3. View of the upper surface of a corallum, whose corallets are above the average size; from the dark-red encrinal-limestone clay of the Upper Devonian, near Louisville.

These specimens are from the collection of the author.

PLATE 112.

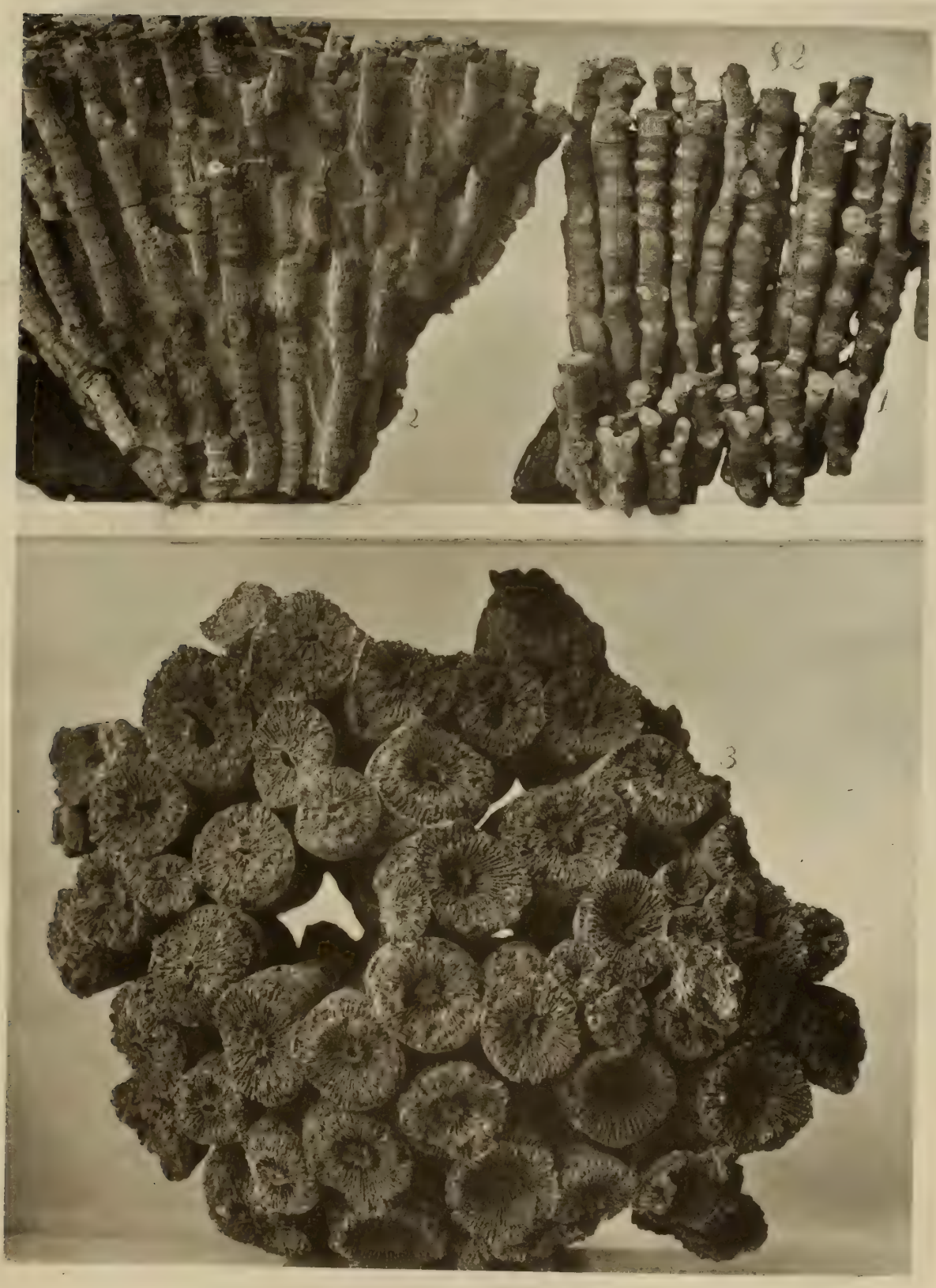


PLATE 113.

PLATE 113.

DIPHYPHYLLUM ARCHIACI. *Devonian.*

1. Lateral view of specimen figured in Plate 112, Fig. 3.

DIPHYPHYLLUM VERNEUILANUM. *Devonian.*

2. Lateral view of a fragment, from the Middle Devonian rocks, Falls of the Ohio. Collection of Dr. Knapp.

CYATHOPHYLLUM DAVIDSONI. *Devonian.*

3. View of the upper surface of a corallum, from the Middle Devonian rocks, Falls of the Ohio. Collection of the author.

PLATE 114.

DIPHYPHYLLUM STRICTUM. *Devonian.*

View of the upper surface of a corallum, from the Middle Devonian rocks, Falls of the Ohio.

Collection of the author.

PLATE 114.

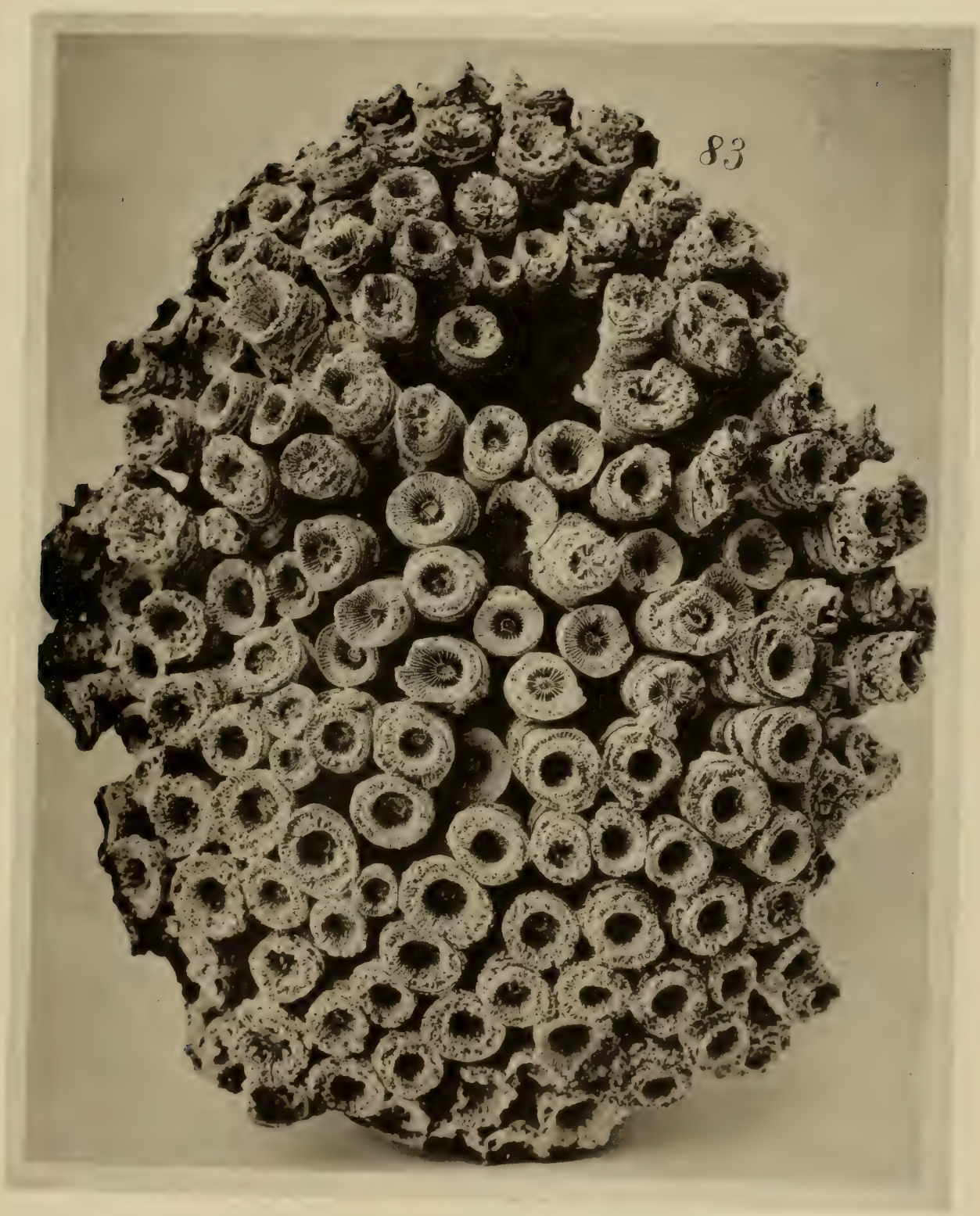


PLATE 115.

PLATE 115.

DIPHYPHYLLUM GIGAS. *Devonian.*

1. Lateral view of a weathered corallum, from the Middle Devonian rocks, Falls of the Ohio.
2. View of the upper surface of a fragment, from the Middle Devonian red clay, near Louisville.

DIPHYPHYLLUM PANICUM. *Devonian.*

3. 4. View of the upper surfaces of small coralla, from the Middle Devonian red clay, near Louisville.

Collection of the author.

PLATE 116.

DIPHYPHYLLUM CONJUNCTUM, Nov. Spec. *Devonian.*

1. View of the upper surface of a corallum, from the Middle Devonian rocks, Falls of the Ohio.
2. View of the upper surface of a corallum, showing the up-springing of young corallets from the floors of the polygonally compressed older calyces; from the ferruginous clay of the upper strata of the Middle Devonian, Falls of the Ohio.
3. Vertical section of a fragment, from the horizon and locality of the preceding specimen.

DIPHYPHYLLUM BELLIS, Nov. Spec. *Devonian.*

4. Oblique view of the upper surface of a corallum, from the upper rock strata of the Middle Devonian, Falls of the Ohio.

Collection of the author.

PLATE 116.

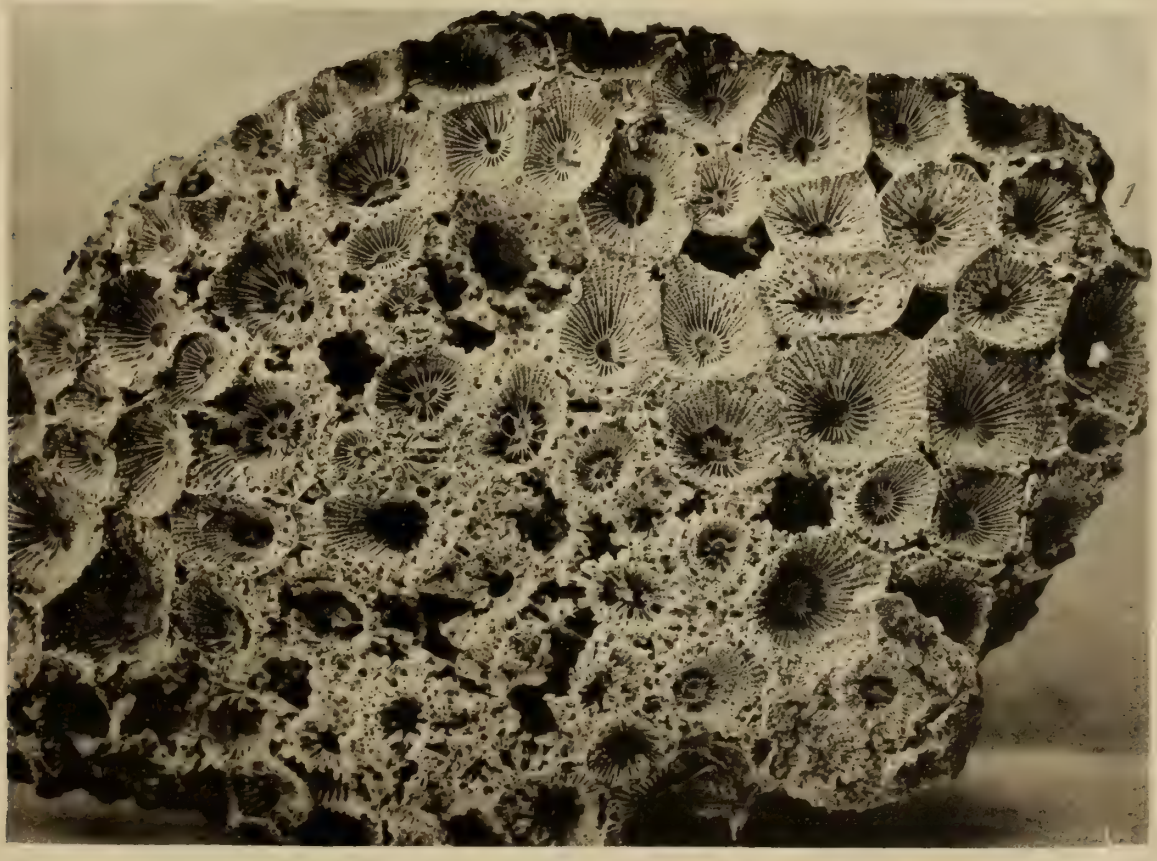


PLATE 117.

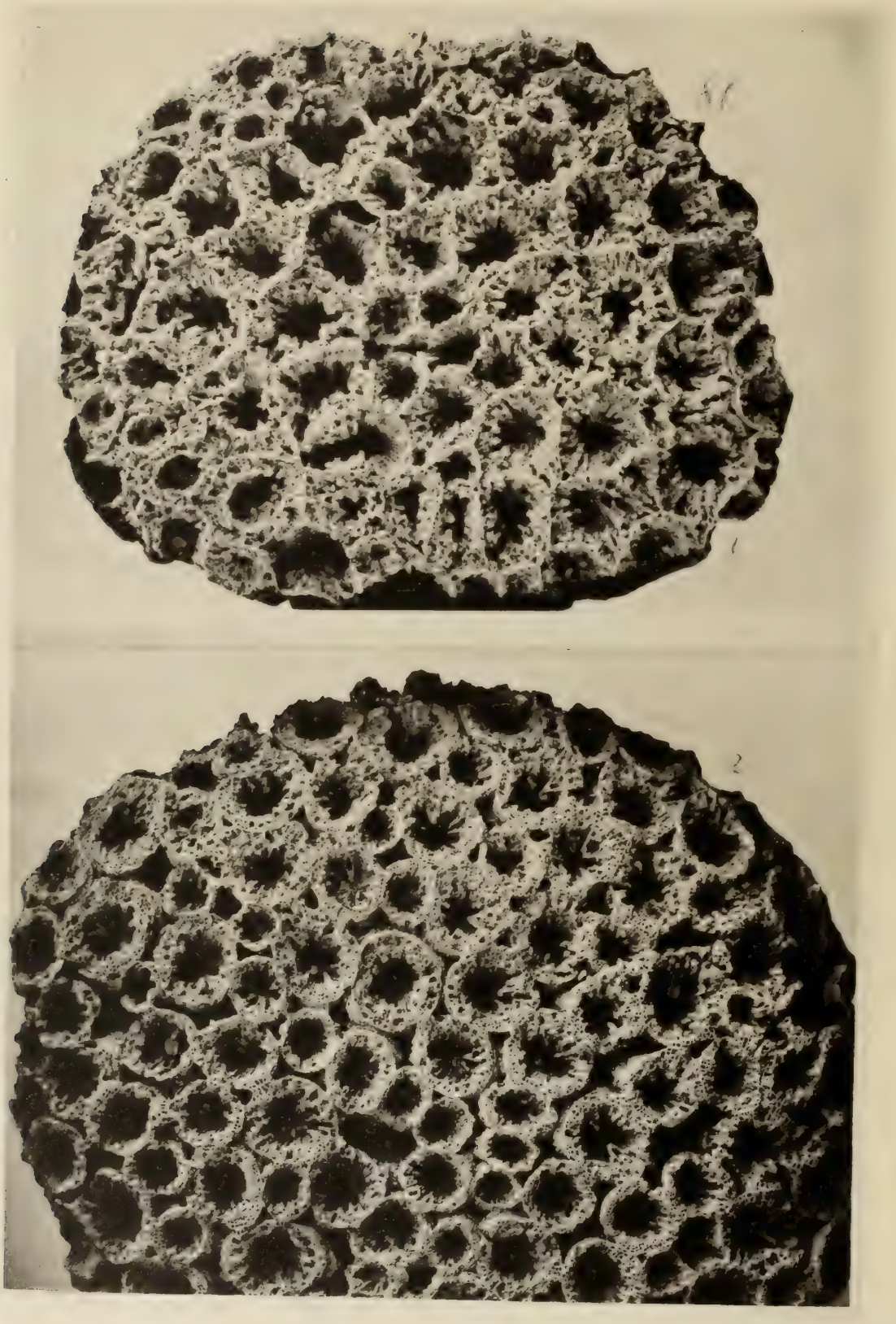


PLATE 117.

DIPHYPHYLLUM COALESCENS, Nov. Spec. *Devonian.*

1. View of the upper surface of a corallum, from the upper rock strata of the Middle Devonian, Falls of the Ohio.

DIPHYPHYLLUM COAGULATUM, Nov. Spec. *Devonian.*

2. View of the upper surface of a corallum, from the horizon and neighborhood of the preceding species.

Collection of the author.

PLATE 118.

PHILLIPSASTREA GIGAS. *Devonian.*

1. View of the upper surface of a fragment, from the Middle Devonian waste of Marion county. Collection of the author.
2. View of the upper surface of a fragment, from the Middle Devonian red clay, near Louisville. Collection of Mr. McConathy.

PHILLIPSASTREA INGENS, Nov. Spec. *Devonian.*

3. View of the upper surface of a fragment, showing the upraised rounded rims between the central pits and the perimeters of the explanate calyces; from the Middle Devonian waste of Marion county. Collection of the author.

PLATE 118.

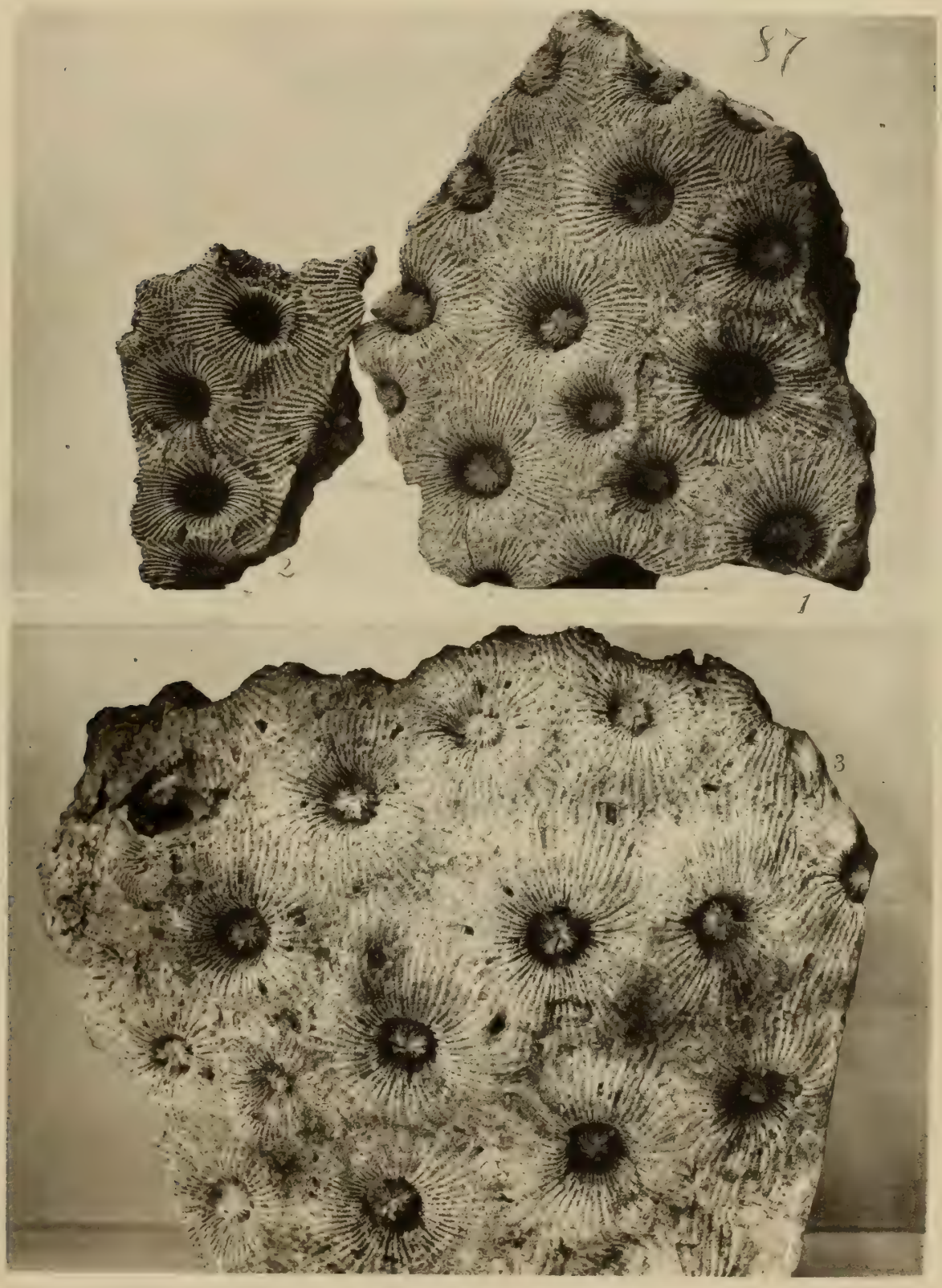


PLATE 119.

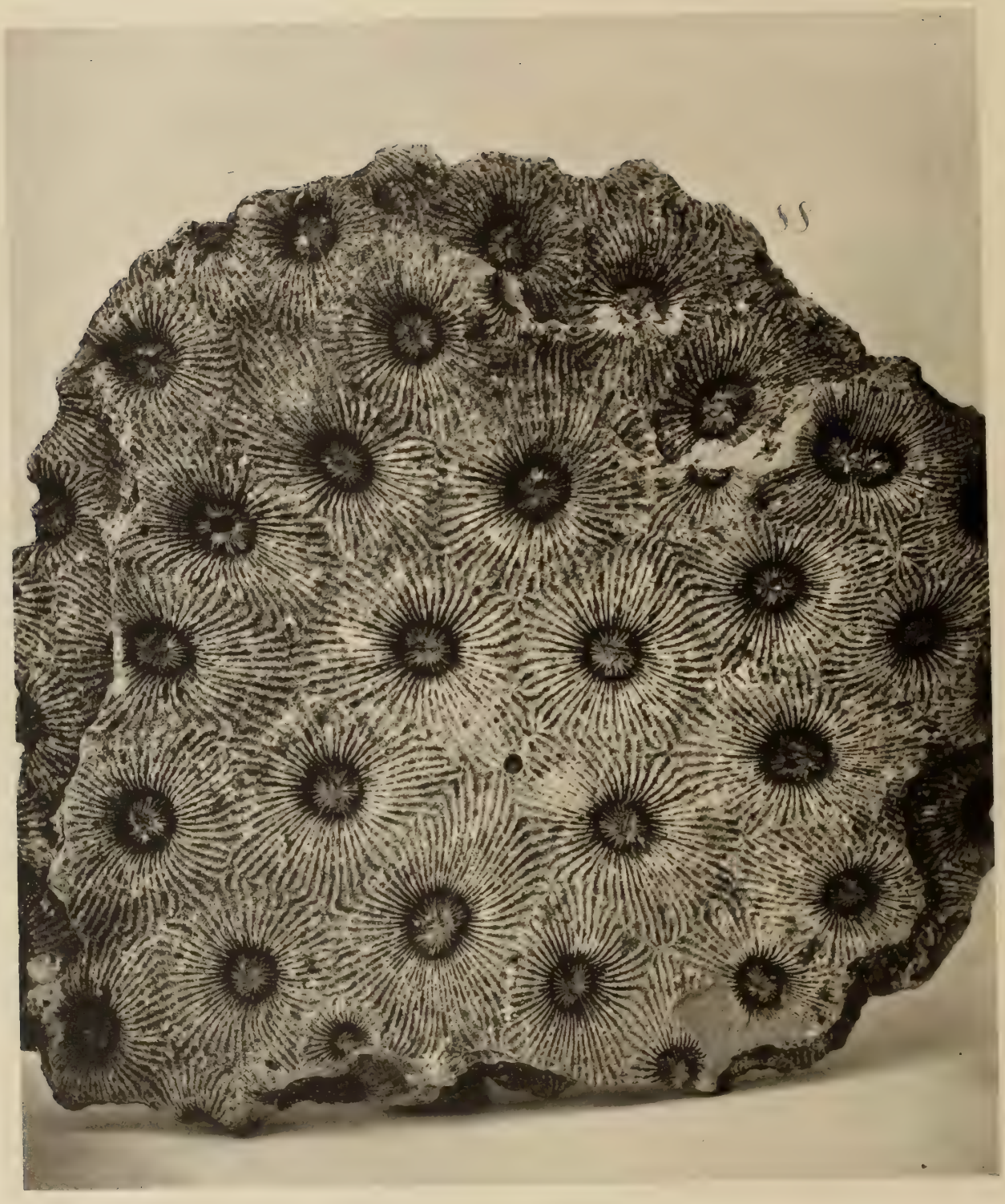


PLATE 119.

PHILLIPSASTREA INGENS, Nov. Spec. *Devonian.*

View of the upper surface of a corallum, from the Middle Devonian waste of Marion county. Collection of the author.

[NOTE.—In the right upper corner are seen twin corallets. These spring from the margin of the inferior calyx.]

PLATE 120.

STROMBODES KNOTTI, Nov. Spec. *Devonian.*

1. View of the upper surface of a fragment, from the Lower Devonian clay of Marion county. Collection of Mr. Knott.
2. View of the upper surface of a fragment, showing somewhat larger central pits.
3. View of the upper surface of a fragment.
4. View of the under surface of a fragment.
5. View of the under surface of a fragment, with a part of the epitheca fortuitously stripped so as to show the terete apical part of a corallet.

   Specimens 2, 3, 4, 5, are from the horizon and vicinage of example 1. Collection of the author.
6. View of the upper surface of a moderately well preserved example, with extra-sized central pits and calyx walls better defined than is common.

   From the horizon and neighborhood of the other specimens. Collection of Mr. Linney.

PLATE 120.

PLATE 121.

PLATE 121.

STROMBODES STRIATUS. *Niagara.*

1. View of the upper surface of a weathered corallum, from the ferruginous clay of the Upper Niagara, near Louisville. Collection of the author.

STROMBODES PENTAGONUS. *Niagara.*

2. View of the upper surface of a fragment, from the white clay of the Upper Niagara, near Louisville. Collection of the author.
3. View of the upper surface of a corallum, from the red clay of the passage-beds between the Niagara and Devonian rocks, near Louisville. Collection of the author.

STROMBODES SINEMURUS, Nov. Spec. *Niagara.*

4. View of the upper surface of a corallum, from the horizon and neighborhood of S. pentagonus, Fig. 2. Collection of Mr. McConathy.

PLATE 122.

STROMBODES STRIATUS. *Niagara.*

1. View of the upper surface of a corallum, from the Upper Niagara white clay, near Louisville. Collection of the author.
2. View of a vertical section of a weathered corallum, from the Upper Niagara red clay, near Louisville. Collection of the author.

STROMBODES QUADRANGULARIS, Nov. Spec. *Niagara.*

3. View of the upper surface of a corallum, from the lower strata of the Upper Niagara red clay, near Louisville. Collection of the author.

STROMBODES UNICUS, Nov. Spec. *Niagara.*

5. Lateral view of a corallum, from the Upper Niagara red clay, near Louisville. Collection of Mr. Nettelroth.

STROMBODES SINEMURUS, Nov. Spec. *Niagara.*

4. View of the upper surface of a corallum, from the Upper Niagara white clay, near Louisville. Collection of the author.
6. View of the upper surface of a corallum, from the red clay of the Upper Niagara, near Louisville. Collection of Mr. Nettelroth.

PLATE 122.

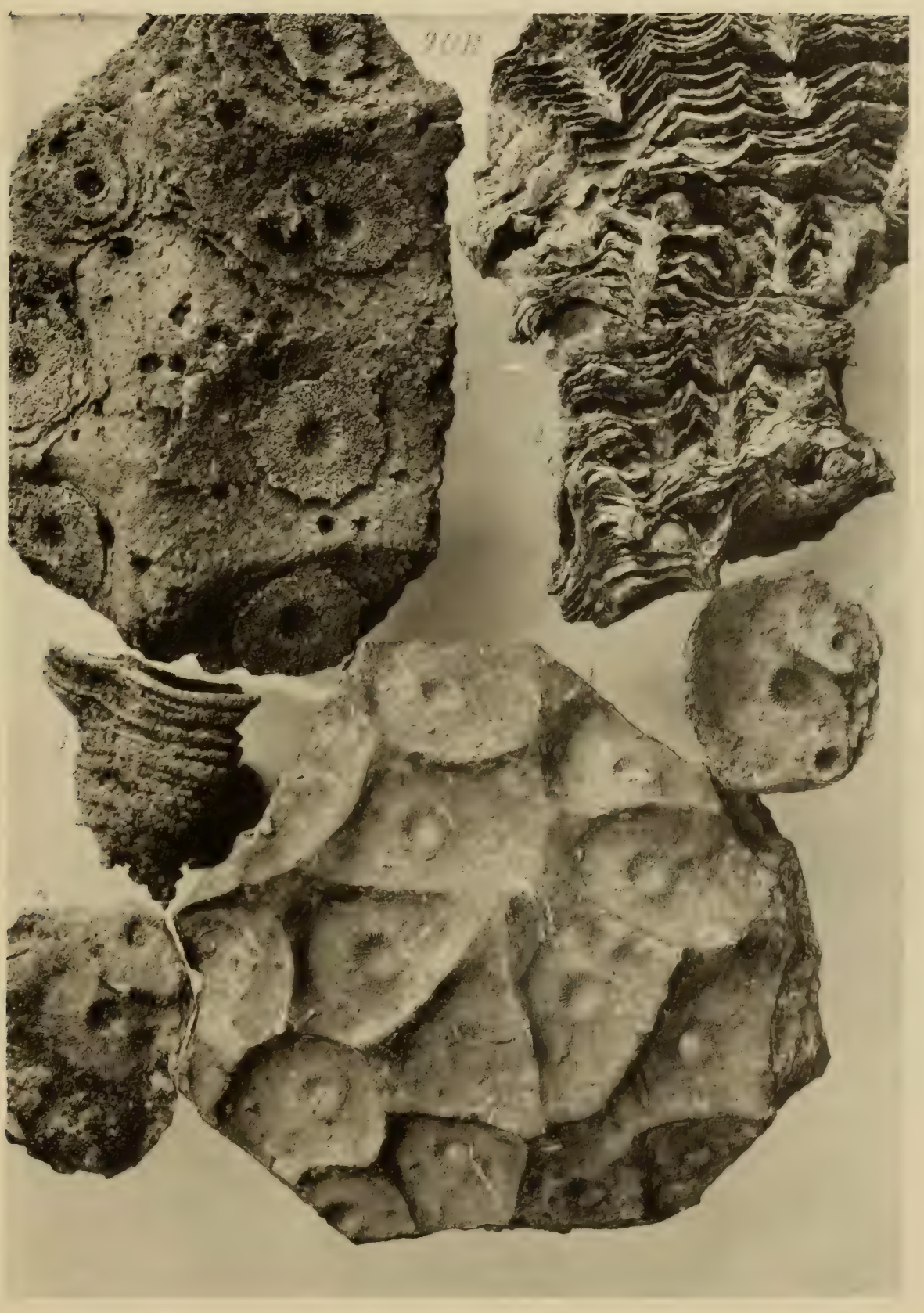


PLATE 123.

PLATE 123.

STROMBODES PYGMŒUS. *Niagara.*

1. View of the upper surface of a corallum, from the white clay of the Upper Niagara, near Louisville. Collection of the author.

STROMBODES INCERTUS, Nov. Spec. *Niagara.*

2. View of the upper surface of a corallum, from the Upper Niagara red clay, near Louisville. Collection of the author.

STROMBODES SINEMURUS, Nov. Spec. *Niagara.*

3. View of the upper surface of a corallum, from the Upper Niagara red clay, near Louisville. Collection of Mr. McConathy.

STROMBODES MAMILLARIS. *Niagara.*

4. View of the upper surface of a small corallum, from the Upper Niagara red clay, near Louisville. Collection of the author.

PLATE 124.

CYSTIPHYLLUM NIAGARENSE. *Niagara.*

1. Left lateral view of an adult corallum.
2. Anterior view of a gemmiferous corallum.
3. Anterior view of a small corallum.

   Examples 1, 2, 3, are from the Upper Niagara red clay, near Louisville.

4. View of the calyx and oblique anterior view of a small corallum.
5. View of the calyx of an adult corallum, in which three of the four foveal gaps proper to Cyathophylloidea are conspicuous.

   Specimens 4 and 5 are from the white clay of the Upper Niagara, near Louisville.

CYSTIPHYLLUM INCURVUM, Nov. Spec. *Niagara.*

6. Left lateral view of a small corallum, with denuded epitheca, from the Upper Niagara white clay, near Louisville.
7. Posterior view of an adult corallum, from the Upper Niagara red clay, near Louisville. Collection of Mr. McConathy.
8. Anterior view of a corallum, from the horizon and neighborhood of the preceding example. From the collection of Mr. McConathy.

CYSTIPHYLLUM AMERICANUM. *Devonian.*

9. Posterior view of a corallum of robust habit, with warped apical scar of attachment; from the encrinal limestone clay of the Upper Devonian, near Louisville.
10. Right lateral view of a corallum, from the Lower Devonian rocks, Falls of the Ohio.
11. Right lateral view of a corallum, from the blue clay of the Middle Devonian, Falls of the Ohio.

    The specimens figured in this Plate, with the exception of Figs. 7 and 8, belong to the collection of the author.

PLATE 124.

PLATE 125.

PLATE 125.

CYSTIPHYLLUM SULCATUM. *Devonian.*

1. Left lateral view of a symmetrical adult corallum.
2. Left lateral view of a slender corallum.
3. View of the calyx of a corallum similar to example 1.

From the Lower Devonian rocks, Falls of the Ohio.

CYSTIPHYLLUM SQUAMOSUM. *Devonian.*

4. Posterior view (prone) of a corallum, from the Middle Devonian red clay, near Louisville.
5. Right lateral view of a weathered corallum of unusual altitude; from the horizon and neighborhood of the preceding specimen.
6. View of the calyx of a corallum, from the blue clay of the Middle Devonian, Falls of the Ohio.

CYSTIPHYLLUM NETTELROTHI, Nov. Spec. *Devonian.*

7. Right lateral view of a corallum.
9. Posterior view (prone) of a corallum.
8. View of the calyx of a corallum, whose radial lamellæ are somewhat obscured by siliceous deposition in annular dots.

From the ferruginous clay of the Lower Devonian, near Louisville.

CYSTIPHYLLUM CICATRICIFERUM, Nov. Spec. *Devonian.*

10. Posterior view of a corallum, from the Lower Devonian rocks, Falls of the Ohio.
11. View of the calyx of a corallum of sessile growth, whose circular apical scar has the dimensions of the calyx; from the encrinal limestone clay of the Upper Devonian, near Louisville.

CYSTIPHYLLUM OHIOENSE. *Devonian.*

12. Left lateral view of a corallum.
13. Posterior view of a corallum.

From the red clay strata derived from the encrinal limestone of the Upper Devonian, near Louisville.

The specimens herein figured belong to the collection of the author.

PLATE 126.

CYSTIPHYLLUM GRANDE. *Devonian.*

1. Anterior view of an adult corallum, with a portion of the wall removed, so as to show the delicately laminated calyx wall and the floor; from the Lower Devonian rocks, Falls of the Ohio.

CYSTIPHYLLUM LIMBATUM, Nov. Spec. *Devonian.*

2. Left lateral view of the upper part of a corallum, from the Lower Devonian rocks, Falls of the Ohio.

Collection of the author.

PLATE 126.

KENTUCKY GEOLOGICAL SURVEY.

PLATE 127.

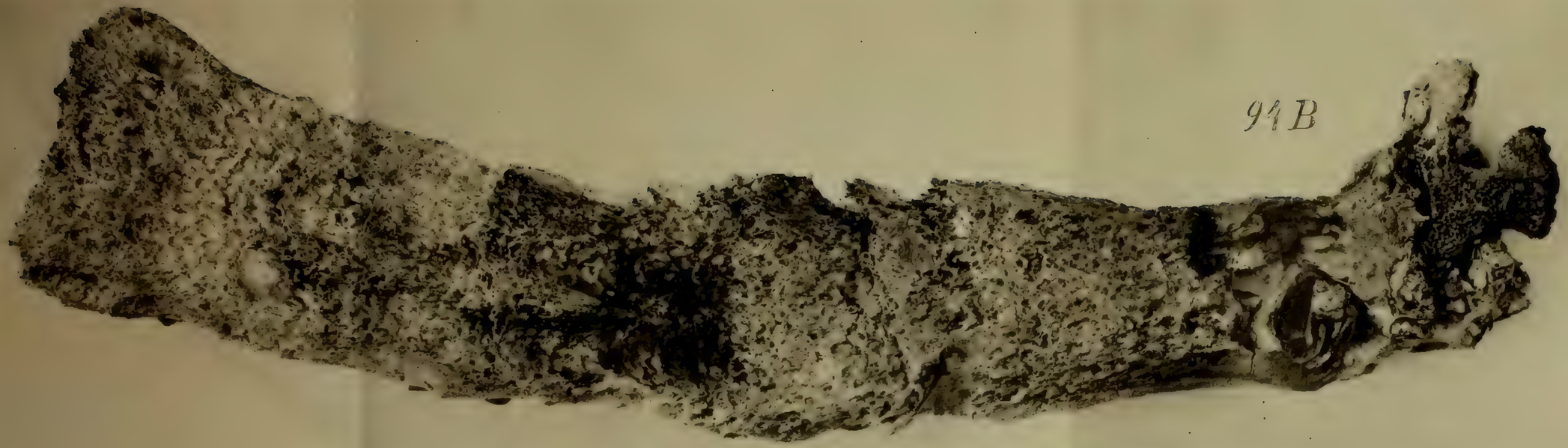


PLATE 127.

CYSTIPHYLLUM HISPIDUM, Nov. Spec. *Devonian.*

Left lateral view of a corallum (prone), from the Lower Devonian rocks, Falls of the Ohio. Collection of the author.

PLATE 128.

CYSTIPHYLLUM LINEATUM, Nov. Spec. *Niagara* and *Devonian.*

1. Left lateral view of a corallum, from the ferruginous clay of the Lower Devonian, near Louisville.
2. Right lateral view of an adult corallum, from the Upper Niagara red clay, near Louisville.
3. Exterior view of a corallum, from the passage-beds between the Niagara and Devonian formations, near Louisville.
4. View of the calyx of a large corallum, from the horizon and neighborhood of specimen 1.

CYSTIPHYLLUM PLICATUM, Nov. Spec. *Devonian.*

5. 6. 7. Right lateral views of small coralla, with apical scars of attachment.
8. Anterior view of a corallum, with apical scar.

From the blue clay of the Middle Devonian, Falls of the Ohio.

CYSTIPHYLLUM EDWINANUM, Nov. Spec. *Devonian.*

9. View of the calyx of a gemmiferous corallum.

From the Middle Devonian red clay, near Louisville.

CYSTIPHYLLUM TUMIDOSUM, Nov. Spec. *Devonian.*

10. View of the calyx of a corallum of average size.

From the horizon and locality of C. edwinanum.

CYSTIPHYLLUM THEISSI, Nov. Spec. *Devonian.*

11. Posterior view of an adult corallum.
12. Left lateral view of a corallum.
13. Anterior view of a gemmiferous corallum.
14. View of the calyx of a corallum.

From the blue clay of the Middle Devonian, Falls of the Ohio.

The specimens figured in this Plate are from the collection of the author.

PLATE 128.

PLATE 129.

PLATE 129.

CYSTIPHYLLUM HISPIDUM, Nov. Spec. *Devonian.*

1. View of the calyx of the corallum, figured in Plate 127.

CYSTIPHYLLUM VESICULOSUM. *Devonian.*

2. Left lateral view of a corallum, from the Lower Devonian rocks, Falls of the Ohio.

CYSTIPHYLLUM PLICATUM, Nov. Spec. *Devonian.*

3. Left lateral view of a large corallum, from the Lower Devonian rocks, Falls of the Ohio.

Collection of the author.

PLATE 130.

ZAPHRENTIS TRIGEMMA, Nov. Spec. *Devonian.*

1. Left lateral view of a portion of a corallum, partly imbedded in the rock matrix.
2. Anterior view of the superior portion of a corallum.

From the Lower Devonian rocks, Falls of the Ohio.

ZAPHRENTIS NODULOSA. *Devonian.*

3. Anterior view of a large corallum, with a portion of the rock matrix attached; from the Lower Devonian rocks, Falls of the Ohio.

CYSTIPHYLLUM PLICATUM, Nov. Spec. *Devonian.*

4. Posterior view of a corallum, with epitheca denuded, and the successively invaginating calyx-wall margins fortuitously worn off, showing the radial lamellæ.
5. View of the calyx of a corallum.

From the Lower Devonian rocks, Falls of the Ohio.

CYSTIPHYLLUM OS, Nov. Spec. *Devonian.*

6. 7. Lateral views of coralla, with spreading apices, from the Lower Devonian rocks, Falls of the Ohio.

CYATHOPHYLLUM GREENI, Nov. Spec. *Devonian.*

8. Left lateral view of an adult a jejune corallum.
9. Right lateral view of the upper portion of a jejune corallum.

From the Lower Devonian rocks, Falls of the Ohio.

The examples figured in the Plate are from the collection of the author.

PLATE 130.

PLATE 131.

PLATE 131.

CALCEOLA PROTEUS, Nov. Spec. *Niagara.*

1. Anterior view of a proliferous corallum, from the Upper Niagara white clay, near Louisville. Collection of the author.
2. View of portions of some corallets partly imbedded in rock matrix; from the Upper Niagara strata, Falls of the Ohio. Collection of Mr. Nettelroth.
3. Posterior view of a large corallum, from the white clay of the Upper Niagara, near Louisville. Collection of Mr. Nettelroth.
4. Posterior view of a corallum of average size, from the red clay of the Upper Niagara, near Louisville. Collection of the author.
5. View of the calyx and oblique anterior view of a corallum, from the horizon and neighborhood of example 4. Collection of the author.
6. View of the calyx and oblique posterior view of a corallum, from the locality of specimen 5.

8. 9. Oblique views (8 inverted) of small coralla, from the Upper Niagara white clay, near Louisville. Collection of the author.

7. Oblique view of a corallum, whose calyx is closed by an operculum; from the white clay of the Upper Niagara, near Louisville. Collection of Mr. Nettelroth.

14. 15. 16. Oblique views of coralla, with calyces closed by opercula; from the horizon and vicinage of specimen 7. Collection of the author.

13. View of the exterior surface of the operculum of a corallum of average size; from the horizon and neighborhood of example 7. Collection of Mr. Nettelroth.

17. View of the operculum of a small corallum from the same place. Collection of the author.

10. View of a gem detached from its parent.
11. Posterior view of a gemmiferous corallum.
12. Posterior view of a fortuitously detached gem.

Specimens 10, 11, 12, are from the Upper Niagara red clay strata, near Louisville. Collection of the author.

[NOTE.—In Fig. 18 an oblique posterior view of a corallum of *Calceola sandalina*, an European form said to be from the Devonian strata of the Eifel, closed by an operculum, is here presented for comparison with our Niagara species.]

PLATE 132.

ZAPHRENTIS CORNICULUM. *Hudson River Group.*

1. Left lateral view of an adult corallum, from the Hudson River Group of the Lower Silurian formation, near Milton.
2. Oblique view of the calyces of two small inosculated coralla from the same place.
3. View of the calyx of a small corallum from the same place.

ZAPHRENTIS SPONGIAXIS. *Niagara.*

4. Right lateral view of a corallum, from the white clay of the Upper Niagara, near Louisville.
5. Lateral view of a corallum, with part of the calyx wall removed, so as to show the spongiose central cone; from the red clay of the Upper Niagara, near Louisville.
6. View of the calyx, with walls fortuitously removed, and oblique anterior view of a corallum, from the horizon and neighborhood of specimen 4. Collection of Mr. Gaines.

ZAPHRENTIS UNICA, Nov. Spec. *Niagara.*

7. Left lateral view of a corallum, from the red clay strata of the Upper Niagara, near Louisville.
8. Similar view of a geniculated corallum, from the white clay beds of the Upper Niagara, near Louisville.
9. Right lateral view of a corallum.
10. Posterior view of a corallum.

Specimens 9 and 10 from the horizon and vicinage of example 8.

ZAPHRENTIS RADICANS. *Niagara.*

11. Anterior view of a corallum, with apex broken off, from the Upper Niagara red clay, near Louisville.
12. Left lateral view of a corallum, with anterior calyx wall fortuitously removed, from the Upper Niagara red clay, near Louisville.
13. Posterior view of a young corallum, from the horizon and vicinity of specimen 11.

AMPLEXUS SHUMARDI. *Niagara.*

14. Fragments of two coralla, partly imbedded in chert matrix, from the Upper Niagara red clay, near Louisville.

The specimens figured in this Plate, with the exception of 6, belong to the collection of the author.

PLATE 132.

PLATE 133.

PLATE 133.

ZAPHRENTIS SCUTELLA, Nov. Spec. *Niagara.*

1. Left lateral view of a corallum, with calyx filled with rock, from the Upper Niagara, near Louisville. Collection of the author.
2. Similar view of a weathered corallum, from the Upper Niagara red clay, near Louisville.
3. View of the exterior of a corallum, from the Upper Niagara white clay, near Louisville. Collection of the author.

ZAPHRENTIS PATULA. *Niagara.*

4. Right lateral view of a corallum, from the lower strata of the Niagara period, near Brunerstown, Jefferson county. Collection of the author.
5. View of the calyx of a corallum.
6. Oblique views of inosculated coralla.

Examples 5 and 6 from the locality of specimen 4. Collection of the author.

ZAPHRENTIS SOCIALIS, Nov. Spec. *Niagara.*

7. Right lateral view of a corallum.
8. 9. Views of the calyces of coralla.

From the horizon and vicinage of Z. patula. Collection of the author.

ZAPHRENTIS PATENS, Nov. Spec. *Niagara.*

10. Left lateral view of a corallum.
11. View of the calyx of a corallum.

Both from the horizon and vicinage of Z. patula and Z. socialis. Collection of the author.

ZAPHRENTIS CONULUS. *Niagara.*

12. Right lateral view of a corallum.
13. Posterior view of a corallum.
14. View of the calyx of a corallum.

From the Upper Niagara ferruginous clay, near Louisville. Collection of the author.

PLATE 133—*Continued.*

ZAPHRENTIS OBLIQUA, Nov. Spec. *Niagara.*

15. Left lateral view of a corallum.
16. Posterior view of a corallum.
17. View of the calyx of a corallum.

From the horizon and vicinage of Z. conulus. Collection of the author.

CYATHOPHYLLUM EXIGUUM. *Devonian.*

18. View of the calyx of a large corallum, from the Lower Devonian rocks, Falls of the Ohio. Collection of Mr. McConathy.
19. View of the calyx of a corallum of average size, from the horizon and locality of example 18. Collection of the author.
20. Posterior view of a corallum.
21. Right lateral view of a corallum.
22. View of the calyx of a corallum.

[NOTE.—In example 22 the lamellæ from the inner rim to the outer rim of the calyx wall seem to be faintly carinated. Other examples are so obscurely carinated as to superficially resemble Zaphrentis, with which genus they have been classed by Rominger.]

Specimens 20, 21, 22, are from the ferruginous clay of the Lower Devonian, near Louisville. Collection of the author.

CYATHOPHYLLUM EXIGUUM, varietas ELONGATUM, Nov. Var. *Devonian.*

23. Left lateral view of a robust corallum, from the Lower Devonian rocks, Falls of the Ohio.
24. View of the calyx and oblique anterior view of a corallum, from the Lower Devonian ferruginous clay, near Louisville.

Collection of the author.

ZAPHRENTIS REYNOLDSI, Nov. Spec. *Devonian.*

25. Anterior view of a corallum. Collection of the author.
26. Left lateral view of a corallum. Collection of Mr. Nettelroth.
27. View of the calyx of a corallum. Collection of Mr. Nettelroth.

From the ferruginous clay of the Lower Devonian, near Louisville.

ZAPHRENTIS LINNEYI, Nov. Spec. *Devonian.*

28. Posterior view of a corallum. Collection of the author.
29. Left lateral view of a corallum. Collection of the author.

30. Anterior view of a large corallum. Collection of Mr. Nettelroth.
31. View of the calyx of a corallum. Collection of the author.

From the ferruginous clay of the Lower Devonian, near Louisville.

ZAPHRENTIS UNGULA. *Devonian.*

32. Posterior view of a corallum, from the Lower Devonian rocks, Falls of the Ohio.
33. Left lateral view of a corallum, from the same place.
34. Anterior view of a slender corallum of unusual altitude, with laminated structure obscured by the deposition of silica in annular dots during fossilization; from the ferruginous clay of the Lower Devonian, near Louisville.
35. View of the calyx of a corallum, from the horizon and neighborhood of the preceding specimen.

Collection of the author.

PLATE 134.

ZAPHRENTIS CONIGERA. *Devonian.*

1. Left lateral view of a corallum.
2. Right lateral view of a corallum.

Both from the Lower Devonian rocks, Falls of the Ohio.

ZAPHRENTIS COMPRESSA. *Devonian.*

3. Posterior view of a corallum, from the Lower Devonian rocks, Falls of the Ohio.

ZAPHRENTIS EXPLANATA, Nov. Spec. *Devonian.*

4. Anterior view of an elongated conical corallum of medium size.
5. Left lateral view of a corniform corallum.
6. View of the calyx and oblique anterior view of a corallum of common form.

From the dark-red clay derived from the decomposition of the encrinal limestone of the Upper Devonian, near Louisville.

ZAPHRENTIS EXILIS, Nov. Spec. *Devonian.*

7. Posterior view of a corallum.
8. Anterior view of a corallum.

From the blue clay of the Middle Devonian, Falls of the Ohio.

ZAPHRENTIS TORQUATA, Nov. Spec. *Devonian.*

9. 10. Lateral views of coralla.
11. View of the calyx of a corallum.

From the red clay of the Middle Devonian, near Louisville.

ZAPHRENTIS NODULOSA. *Devonian.*

12. Left lateral view of a corallum, from the Lower Devonian rocks, Falls of the Ohio.
13. Left lateral view of the lower portion of a corallum, from the ferruginous clay of the Lower Devonian, near Louisville.

The examples figured in this Plate belong to the collection of the author.

PLATE 134.

PLATE 135.

PLATE 135.

ZAPHRENTIS PROLIFICA. *Devonian.*

1. Left lateral view of a corallum, from the Middle Devonian red clay, near Louisville.

ZAPHRENTIS RAFINESQUI. *Devonian.*

2. Lateral view of a flexuous adult corallum.
3. Left lateral view of a corallum.
4. Right lateral view of a corallum of medium size.
5. Left lateral view of a young corallum, with radiciform processes of attachment.
6. Posterior oblique view of a corallum, with radiciform processes of attachment.

From the blue clay of the Middle Devonian, Falls of the Ohio.

ZAPHRENTIS YANDELLI. *Devonian.*

7. Right lateral view of an adult corallum.
8. Right lateral view of a corallum.

Examples 7 and 8 are from the blue clay of the Middle Devonian, Falls of the Ohio.

9. Right lateral view of a fragment, with a portion of the wall removed, so as to show the lamellæ and the diaphragm of the calyx, and the siphuncular fovea connecting the calyx with the interior cavity; from the red clay of the Middle Devonian, near Louisville.

ZAPHRENTIS ROMINGERI, Nov. Spec. *Devonian.*

10. Posterior view of an adult corallum, from the Middle Devonian blue clay, Falls of the Ohio.

The specimens figured in the Plate are from the collection of the author.

PLATE 136.

ZAPHRENTIS MACONATHI, Nov. Spec. *Devonian.*

1. Right lateral view of a corallum of medium size, from the blue clay of the Middle Devonian rocks, Falls of the Ohio.
2. Left lateral view of a corallum, from the same horizon and locality.
3. Anterior view of the upper part of a corallum of gigantic dimensions, with wall broken down, so as to show the radial lamellæ and the smooth plane diaphragm of the calyx; from the Lower Devonian rocks, Falls of the Ohio.
4. Right lateral view of a young corallum, from the Middle Devonian red clay, near Louisville.

The specimens figured in the Plate belong to the collection of the author.

PLATE 136.

PLATE 137.

PLATE 137.

ZAPHRENTIS GIGANTEA. *Devonian.*

1. Right lateral view of a corallum of medium size, with a portion of the calyx wall removed, so as to show the lamellæ and the diaphragm or floor of the calyx carinated by the primary lamellæ; from the Lower Devonian rocks, Falls of the Ohio.
2. Section of a fragment, showing the thickness of the wall, the arrangement of the lamellæ, and the diaphragms and the inchoate pseudo-diaphragms which, in certain places, appear like dissepiments in the interloculi; from the horizon and locality of the preceding specimen.

Collection of the author.

PLATE 138.

1. View of the calyx of Zaphrentis gigantea.
2. View of the calyx of Zaphrentis immanis.
3. View of the calyx of the Amplexus shumardi in Plate 132, Fig. 14.
4. View of the calyx of Zaphrentis compressa, with anterior wall partly broken.
5. View of the calyx of the Zaphrentis linneyi in Plate 133, Fig. 30.
6. View of the calyx of the Zaphrentis ungula in Plate 133, Fig. 32.
7. View of the calyx (anterior wall removed) of the Zaphrentis nodulosa in Plate 134, Fig. 12.
8. View of the calyx of an adult corallum of Zaphrentis corniculum.
9. View of the calyx of the Zaphrentis prolifica in Plate 135, Fig. 1.
10. View of the calyx of the Zaphrentis exilis in Plate 134, Fig. 8.
11. View of the calyx of Zaphrentis yandelli.
12. View of the calyx of Zaphrentis conigera.
13. View of the calyx of the Zaphrentis rafinesqui in Plate 135, Fig. 2.

Collection of the author.

PLATE 138.

104

PLATE 139.

ZAPHRENTIS IMMANIS, Nov. Spec. *Devonian.*

Right lateral view of a corallum, half natural size, from the Middle Devonian rocks, Falls of the Ohio. Collection of the author.

CALIF ACAD OF SCIENCES LIBRARY
3 1853 10017 5541